FEBRUARY 1961

The American City

A Buttenheim Publication

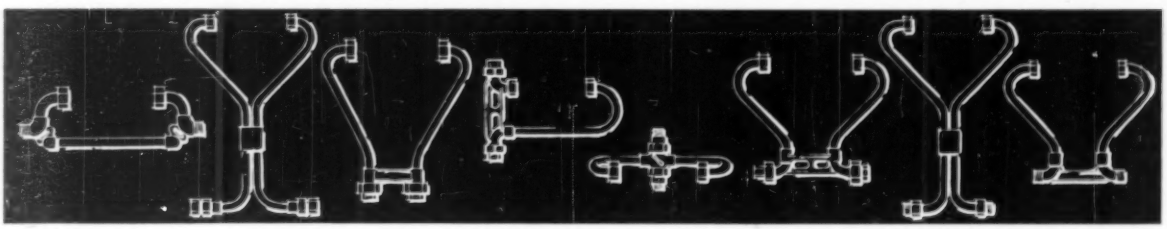
City Manager A. A. DeBard, Jr., Peoria, Ill., (left) insists on meticulous performance at the city's sanitary fill. For information about a nationwide sanitary-fill study, see page 3.

if your
meter settings
look like this...

try one of these

MUELLER®

COPPER meter yokes!



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FEBRUARY 1961

The American City
A Buttenheim Publication

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

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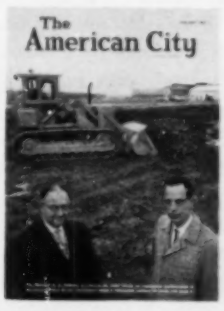
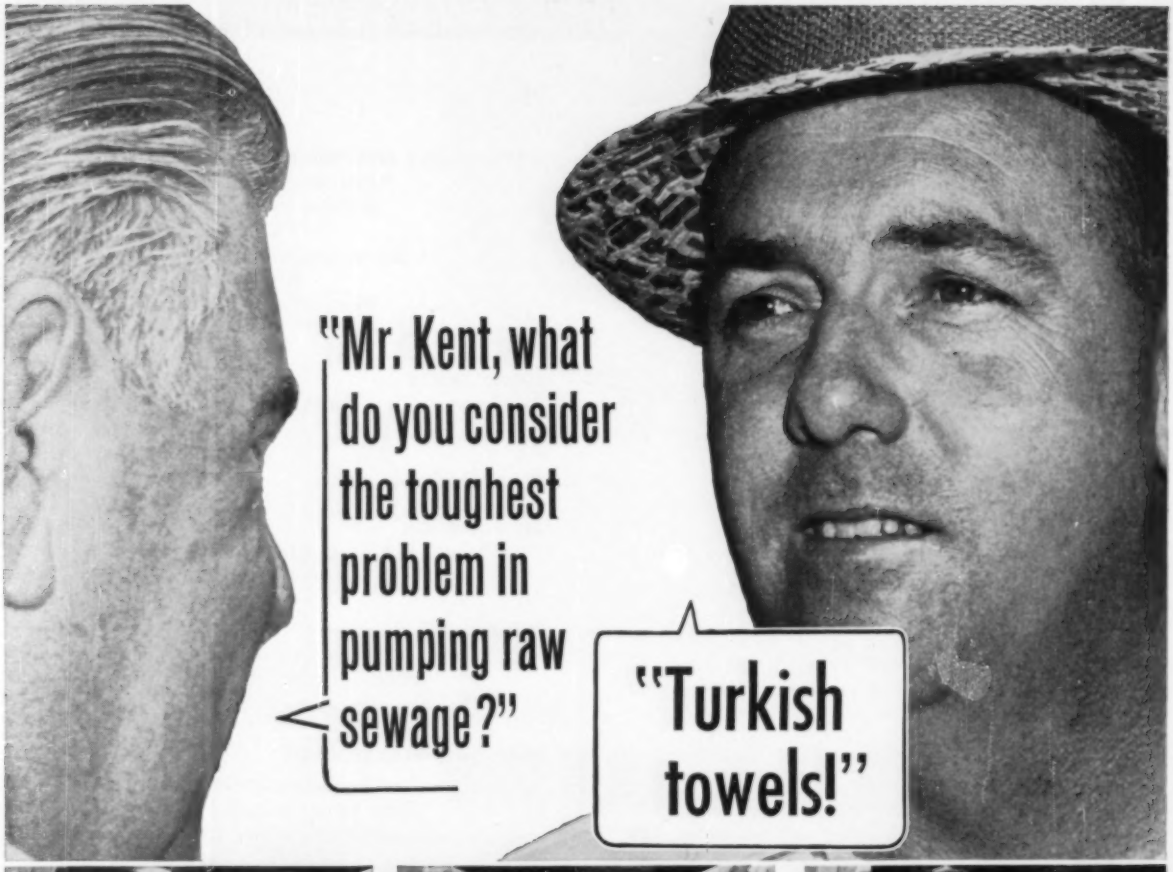


Cover Picture

This month THE AMERICAN CITY introduces the first installment of a sanitary-fill series, based on a nationwide survey conducted by the editors. This starts on p. 84 with a comprehensive table analyzing current sanitary-fill practice in 140 separate cities.

Also, on p. 104, we discuss the unusual Peoria, Ill., sanitary fill, operated as a private contract to exacting standards. The cover illustration shows City Manager A. A. DeBard, Jr., Contractor John Vanderveld, Jr., and the contractors' big Caterpillar tractor, an important factor of the Peoria sanitary fill operation.



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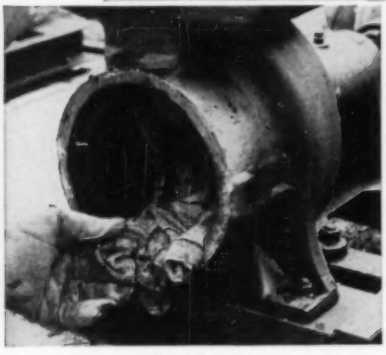
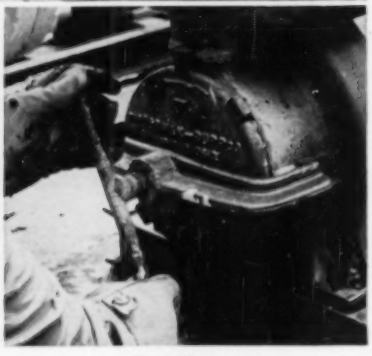
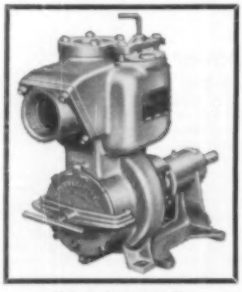


Towel out



End Plate on

"Towels can jam the works, but good!" says Cecil Kent, owner, Sanitation Service Company, Jacksonville, Florida, "I've had 'em clog conventional pumps so bad, it meant a shutdown from two hours to two days.



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"That's why I've standardized on Gorman-Rupp sewage pumps. And what a difference! Fewer shutdowns . . . clogging cleared in just three to fifteen minutes! This cuts average maintenance costs from $120 to only $12 per pump per year. On my 21 Gorman-Rupp pump installations, that adds up to a whopping big saving. Over $2200 a year on parts, packing, materials, and labor.

"Sure, I had a problem—but *no more!*"

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Gorman-Rupp of Canada Ltd., St. Thomas, Ontario

Volume 76 Number 2

The American City

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Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

December Editorial

We are most pleased with your fine editorial in the December 1960 issue ("Real Christmas Gifts for Local Governments"). It is so thought-provoking, we request your permission to republish it in the *Alvin Sun*, our weekly newspaper.

G. L. GARWOOD
Alderman
Alvin, Tex.

EDITOR'S NOTE: A request which pleases us immensely and is granted promptly.

Brings Results

The trials and tribulations of consulting engineering are sometimes rewarded by direct evidence of accomplishment. Many engineering reports end up on book shelves covered with dust as a result of public apathy or the inability of the responsible officials to put the program across. Sometimes, however, we can point to specific instances where the engineering recommendations have been carried out with satisfactory results.

Last April you published an article entitled "Ironing out the Traffic Kinks of Auburn & Lewiston, Me." (April 1960, pp. 98-9), which describes the study we had carried out for the Maine State Highway Department. As a sequel to that, you may be interested in a news story which appeared in the Lewiston Daily Sun on October 12th of this year which describes how " . . . the city of Lewiston this year took a big step toward solving its complex traffic and parking problems . . . " We have had the news clip reproduced on a facsimile of the report cover for distribution to interested persons.

GUY KELCEY
Edwards and Kelcey
Engineers and Consultants

Water-Storage Ideas

Your article "More than Just a Water Tower" (p. 131, January, 1960) is timely. We have had inquiries from time to time for elevated tanks to serve dual purposes. Of course we have always maintained that our pedestal tanks provide, in the base, ample room for chlorinators, pumps, laboratory equipment, and other necessary parts of the water system.

The design of Figure 2 in the article resembles one of the plans that we have proposed. Another design that you sent covering a pedestal-type structure combining elevated storage with a restaurant and a civic center is somewhat similar to one that we worked on but which has been indefinitely postponed.

Perhaps your story will excite interest and we would hope raise the level of thinking in the area of elevated water storage supplies. We think your article is good.

SAM HAMILTON
Chicago Bridge and Iron Co.
Chicago, Ill.

Time to Apply for APWA Scholarship Award

June 1st is the deadline for submitting applications for the American Public Works Association's seventh annual Aid-To-Education award, sponsored by THE AMERICAN CITY. Designed to promote advance study in the field of municipal engineering and administration, the award consists of a $1,000 scholarship for further study at a school selected by the recipient and approved by the American Public Works Association. The winner will also receive an all-expenses-paid trip to the 1961 Public Works Congress and Equipment Show in Minneapolis, Minn., September 24th to 27th, at which time the award will be formally presented.

Candidates for the award must have satisfactorily completed three years of study at an accredited engineering school (as of the date the award is made) and must be enrolled at such school or employed by a municipal public works organization or similar public agency. A special committee appointed by the president of the American Public Works Association will select the recipient, taking into account scholastic capacity, personal qualities, and the relative excellence of a paper written on some subject pertaining to public works.

Applications must be submitted on forms which may be obtained from the American Public Works Association, 1313 East 60th Street, Chicago 37, Illinois. ◄◄

NOW! More jobs are low-cost jobs with New John Deere 1010 *Wheelpower*

Now ready to roll onto your building or earthmoving jobs, new John Deere Wheel Units are powered right, priced right for economical work.

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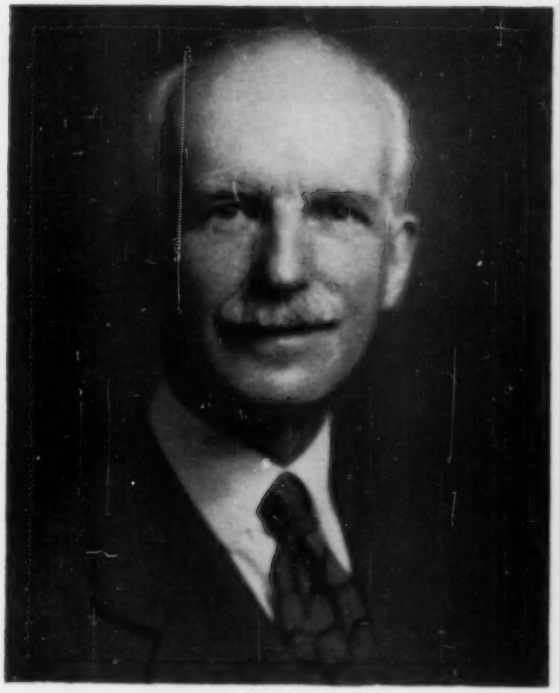
EQUIPMENT

Harold Sinley Buttenheim



Harold Sinley Buttenheim

With a feeling of great personal loss, THE AMERICAN CITY records the death of its Editor Emeritus, Harold Sinley Buttenheim, who served as Editor from 1911 to 1956.

Mr. Buttenheim, known internationally as an expert on municipal government, was a pioneer in the field of city planning and one of its foremost champions. He also was an early advocate and strong supporter of the council-manager form of government, which today has grown to be widely accepted.

During his career, he had been either president or vice president of more than 50 organizations devoted to better local government. He was an honorary vice president of the National Municipal League, honorary president of the Citizens' Housing and Planning Council of New York City, a past president of the American Society of Planning Officials, honorary member of the International City Managers' Association and the American Institute of Planners.

He was born in Brooklyn, N. Y., in 1876, the eldest of seven brothers and sisters. He and his brother, Edgar J. Buttenheim, cut their educations short, following the death of their father, to help support the family. They received early training in the publishing profession with the old Street Railway Journal, and later with The Iron Age. In 1911, the brothers purchased the then recently established American City magazine, and proceeded to build it into the strong, dominant publication that it is today.

From the outset, Harold Buttenheim was determined to make this magazine into a powerful and constructive force in the betterment of urban America. While he could be found in the thick of fights for the elimination of slums and urban blight, and for better administration in local governments, he never was an emotional leader. His arguments consistently were clear, reasoned, tolerant of opposing viewpoints, and virtually impossible to refute.

An illustration of his quiet courage was his action in searching out and challenging the viewpoint of the late Mayor LaGuardia on an issue which the mayor was supporting with his characteristic explosive vigor. This resulted in a great bond of respect between the two.

Mr. Buttenheim's goal was a magazine practical enough to give guidance to a city in facing problems of today, and yet farsighted enough to guide it into a meaningful future, within the democratic framework of a free people. We have followed this pattern carefully, giving close attention to subjects such as water supply, sewerage, street construction and refuse disposal, street lighting, public safety, along with city planning, zoning, and administration. We will continue to follow these guidelines even as an entire nation gradually awakens to the realization that it is urban and not rural, and learns to harness the powerful forces of an urban society for the common good.

We, in THE AMERICAN CITY, feel that this extract from one of the essays of Henry Van Dyke, expresses the spirit of Harold Buttenheim who guided the editorial policies of this magazine for so many years:

"There is a life that is worth living now, as it was worth living in the former days: the honest life, the useful life, the unselfish life, cleansed by devotion to an ideal.

"There is a battle that is worth fighting now, as it was worth fighting then: the battle for justice and equality, to make our city and our state free in fact as well as in name, to break the rings that strangle real liberty and to keep them broken; to cleanse, so far as in our power lies, the foundations of our national life from political, commercial and social corruption; to teach our sons and daughters, by precept and example, the honor of serving such a country as America—that is work worthy of the finest manhood and womanhood.

"The well-born are those who are born to do that work; the well-bred are those who are bred to be proud of that work; the well-educated are those who see deepest into the meaning and the necessity of that work.

"Nor shall their labor be for naught, nor the reward of their sacrifice fail them; for high in the firmament of human destiny are set the stars of faith in mankind and unselfish courage and loyalty to the ideal."

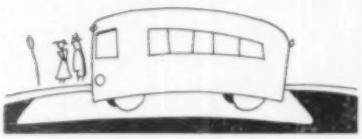
Mr. Buttenheim passed away on January 11. One of his last conscious acts was his instruction that the proposed January editorial in THE AMERICAN CITY be read to him, anticipating a discussion of it with his editors.

OUR MUNICIPAL NOTEBOOK

CONCRETE BUS STOPS

. . . placed on asphalt streets have certain pronounced advantages. First, they prevent damage to the asphalt caused by starting and stopping of heavy buses, and by a concentration of oil drippings. Second, they discourage motorists from parking in bus-stop areas; and third, they positively identify the bus stops for potential passengers.

Cities that have installed these bus



stops include Erie, Pa.; San Antonio, and Houston, Tex.; Wilmington, Del.; Ft. Wayne, Ind.; Kansas City, Mo.; and Washington, D. C.

* * *

STREET-CLEANING ACCOUNTING

Coral Gables, Fla., insists of a daily street-sweeping report to document its street-sanitation program. The report records significant details such as the weather, the time that the sweeper worked, mileage traveled, and amount of debris collected. It records the time required to fill and install the main broom and the side brooms. It provides a means of translating these into total daily costs. On the back is a map of Coral Gables so that the operator can record the route he followed.

The city has two street sweepers that operate over the city's 40 miles of curbed paved streets. Each machine is equipped with a Service recorder to provide an added check on the period of time that the sweeper operates.

* * *

TO BACKFILL

. . . street excavations and not have them settle requires a little attention to soil conditions. On lightly traveled streets, one can backfill with the excavated earth if it is a good sandy or loamy soil—not if it is clayey, a peat, or any material in frozen lumps. On heavily traveled streets, the excavated material should be bank-run or unscreened river sand and gravel. To backfill pipe placed by tunnelling, many tamp excavated earth around the lower portion of the pipe and pack a lean, dry concrete over the tunnel roof. The concrete frequently is one part cement to 12 parts sand and gravel.

* * *

IN FINANCING

. . . street improvements, Seattle, Wash., has used a system called Local Improvement Districts since 1911. The law establishing this assumes that property enjoys benefits from a street improvement as far as the center of the block away from the improvement. Seattle engineers divide this benefited area into five zones and assign a weighted average to each. The law has safeguards to prevent pyramiding of assessments to the point of confiscation but at the same time it provides Seattle taxpayers with good paving at about 20% lower cost than they could get without it.

This same law has been adopted in Washington to build projects such as baseball diamonds, football fields, swimming pools, tennis courts, and similar facilities.

* * *

ALL-NIGHT CURB PARKING

. . . on Milwaukee streets is permissible only with the payment of a $4-per-month fee. The money is used to purchase off-street parking space in residential areas.

* * *

A 32-YARD REFUSE TRUCK

. . . that can receive refuse from large containers holding from six to ten cubic yards is simplifying refuse collection in Atlanta. The city has about 150 Dempster-Dumpster refuse containers with a special truck and hoist that can load them into the supersize Pak-Mor refuse body.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
70 Park Avenue South
New York 16, New York

AN INCINERATOR CORPORATION

. . . built the refuse disposal facilities for Omaha, Nebr. Financial houses in this city formed the non-profit Omaha Incinerator Corporation which built the plant and leased it to the city for ten years. At the end of this period, the city assumes title. The incinerator has a design capacity of 375 tons per day and cost approximately $3,000 per ton of rated capacity. The incinerator uses Pittsburgh-Des Moines furnaces with Flynn & Emrich hydraulic stoking units.

* * *

SLIDE-RULE HOUSE ASSESSMENT

. . . is practical, accurate and fair, according to the appraisal firm, Hunnicutt & Associates, St. Petersburg, Fla. The slide rule is based on the assumption that costs vary according to four factors:

- *quality of materials and workmanship*
- *wall type* • *shape* • *area*

* * *

THE FIREMEN'S BRASS POLE

. . . has given way to a stainless steel slide in Birmingham, Mich. The brass pole has been responsible for

broken ankles and shoulder bones. The new slide, made from Allegheny Ludlum Steel, is 20 feet long and 12 feet high, ending 18 inches above the floor. Fire Chief P. H. Smith recommends it for most two-story stations.

* * *

WRITTEN NOTICE

. . . of street-repair needs is a requirement in Phoenix, Ariz. The city must receive the notice in writing before it will assume liability or recognize action for damages or injuries sustained on streets or sidewalks. Such a requirement has been upheld by numerous legal decisions in other states and is currently being reviewed by the Arizona Supreme Court.

DAYBROOK

"Three times the load—Saves two hours per day in dump travel time." A REPORT FROM CITY OF HAMMOND, INDIANA

Hammond offers taxpayers plenty of service for their money, including two-times-a-week garbage pick-up in many parts of town, because the City's eleven Daybrook Power Packers increase crew efficiency and pack more load . . . all along the route.

Here are some quotes from the Hammond staff:

"We get 3 times the load of previous units, and save up to 2 hours travel time to the dump per day with each Power Packer."

"We like the Daybrook's continuous packing. It eliminates 28 seconds waiting time at each stop."

"It would be impossible to handle our present volume on our present budget, were it not for the efficiency of the Daybrook."

"The safest machine on the market—even kids can't get hurt in it."

Power Packers pre-crush material with a 7-ton force, continuously packing the material into the body. The material is compacted into the body with an additional force. Compared to hopper units, the Power Packer will save up to 28 seconds on every 1½ yards of refuse.

You will be enthusiastic about Daybrook Power Packers once you see them operate. Call your distributor today for all the facts, or write **Equipment Division, Young Spring & Wire Corporation, Bowling Green, Ohio.**

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YOUNG SPRING & WIRE CORPORATION
MANUFACTURERS OF
DAYBROOK TRUCK EQUIPMENT **OTTAWA** CONSTRUCTION EQUIPMENT

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OTTAWA
- HYDRA-HAMMER—Pavement breaker and compactor
- MARAUDER—Self-propelled backhoe and loader
- STRATO-TOWER—Aerial Tower —30 to 100 ft. height

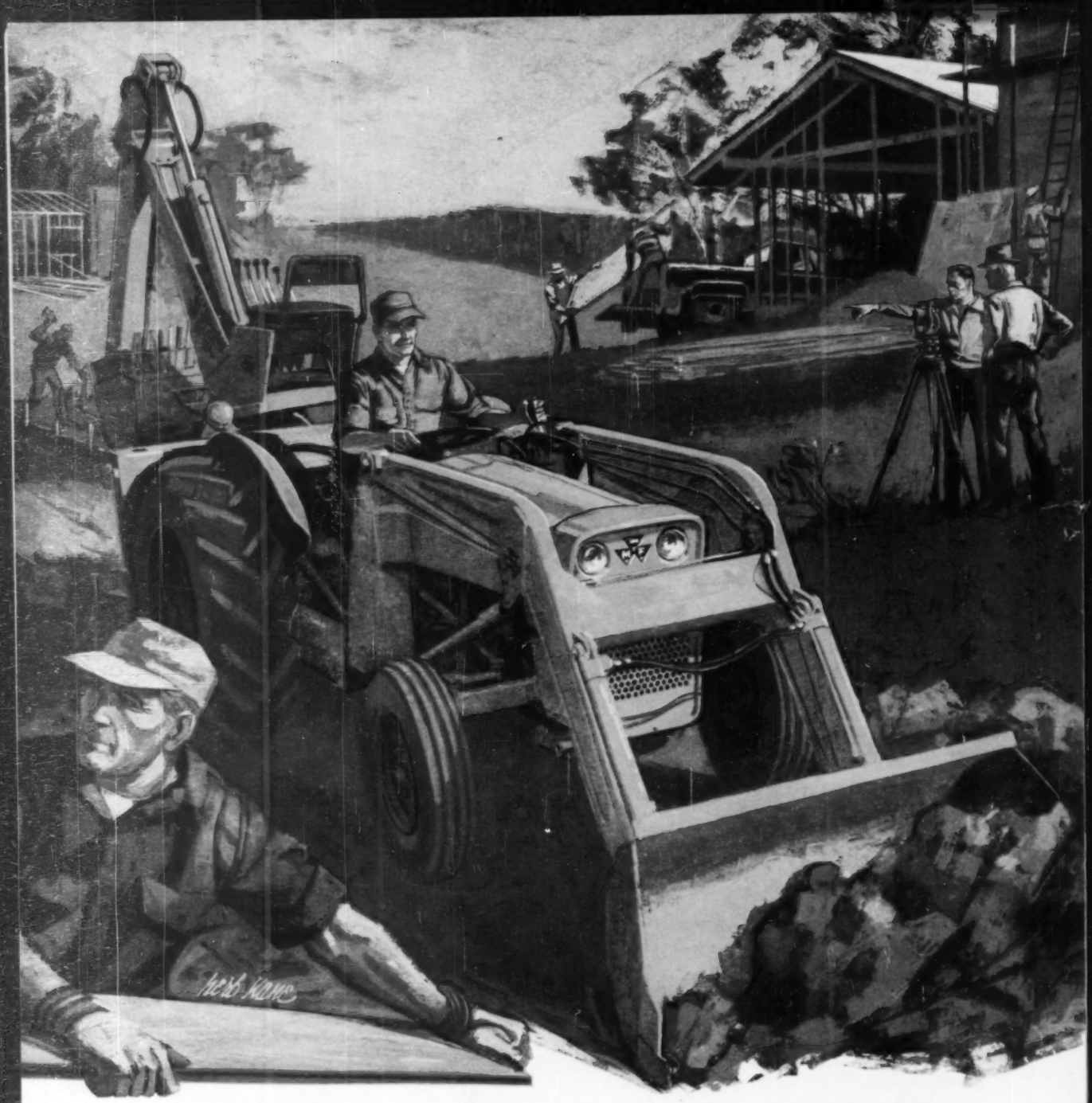
WANT MORE FACTS ON THE DAYBROOK POWER PACKER?
Send coupon today!

- ☐ I want to see the factual color movie "Power Packing."
- ☐ Send me complete literature on the Power Packer.
- ☐ Send me the name of the nearest Daybrook Distributor.
- ☐ Other information_____

Name_____

Address_____

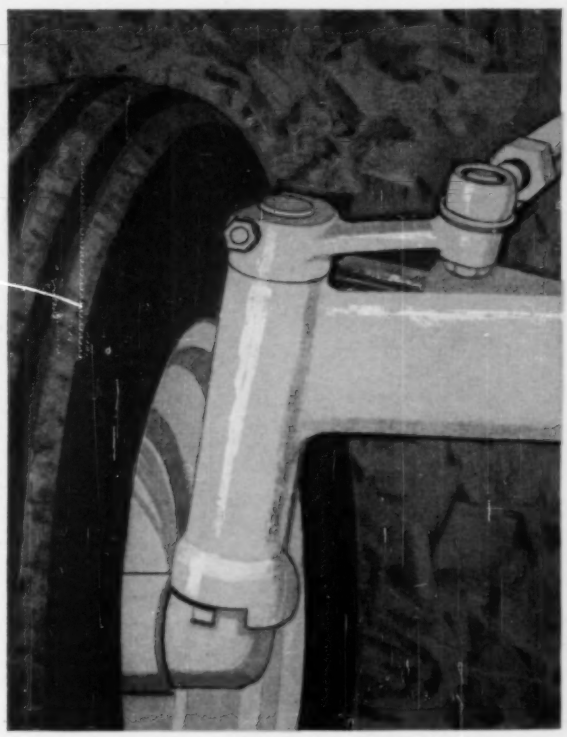
City_____ State_____



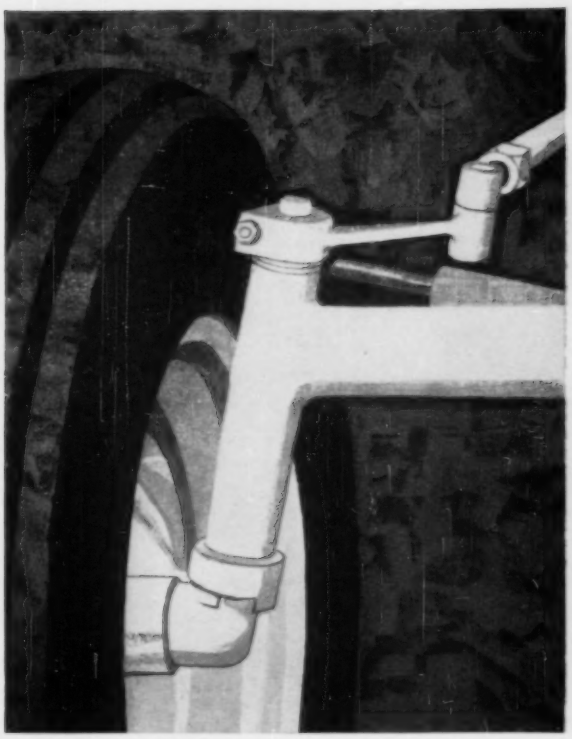
When the world's largest tractor manufacturer . . . Massey-Ferguson . . . engineers a combination like this Loader-Backhoe, you can be sure it is designed with both you and your job in mind. Look at the opposite page for one example of Massey-Ferguson's engineered strength-where-it-counts in the power unit of this Loader-Backhoe rig.

MASSEY FERGUSON INDUSTRIAL EQUIPMENT

Engineered to "take it" on the toughest jobs!



Massey-Ferguson Industrial Tractors have extra-heavy, rugged axle and spindle assemblies...built especially to withstand the pounding of heavy loader work on all types of surfaces.



Ordinary industrial tractors often use axle-spindles that are "warmed-over" light-duty farm tractor assemblies. Under the strain of heavy loader work, they break down.

Some other things you'll want to know: Loader and Backhoe frames "cradle" the tractor . . . no twisting stresses are transmitted to transmission case or tractor frame as in ordinary Loader-Backhoe units. All Massey-Ferguson high-capacity hydraulic cylinders are leak-proof with nick, rust and corrosion resistant piston rods.

NEW KIND OF ENGINEERED
DEPENDABILITY PAYS OFF IN PROFITS!

Massey-Ferguson Industrial Division
12601 Southfield Road, Detroit 32, Michigan

Rugged pipe installs easily –even in a soggy bed

This 30″ cast iron pipe was installed for expansion of a water system in Memphis, Tennessee.

Despite heavy rains, the pipe went right to bed in wet trenches. Upon completion, the mains were tested at 150 psi for 12 hours and were found to be bottle-tight.

Cement-lined cast iron pipe prevents pipe-clogging . . . always delivers a full flow of water. Bottle-tight joints are tight enough to resist hundreds of pounds of pressure per square inch . . . yet flexible enough to permit deflection both during and after installation.

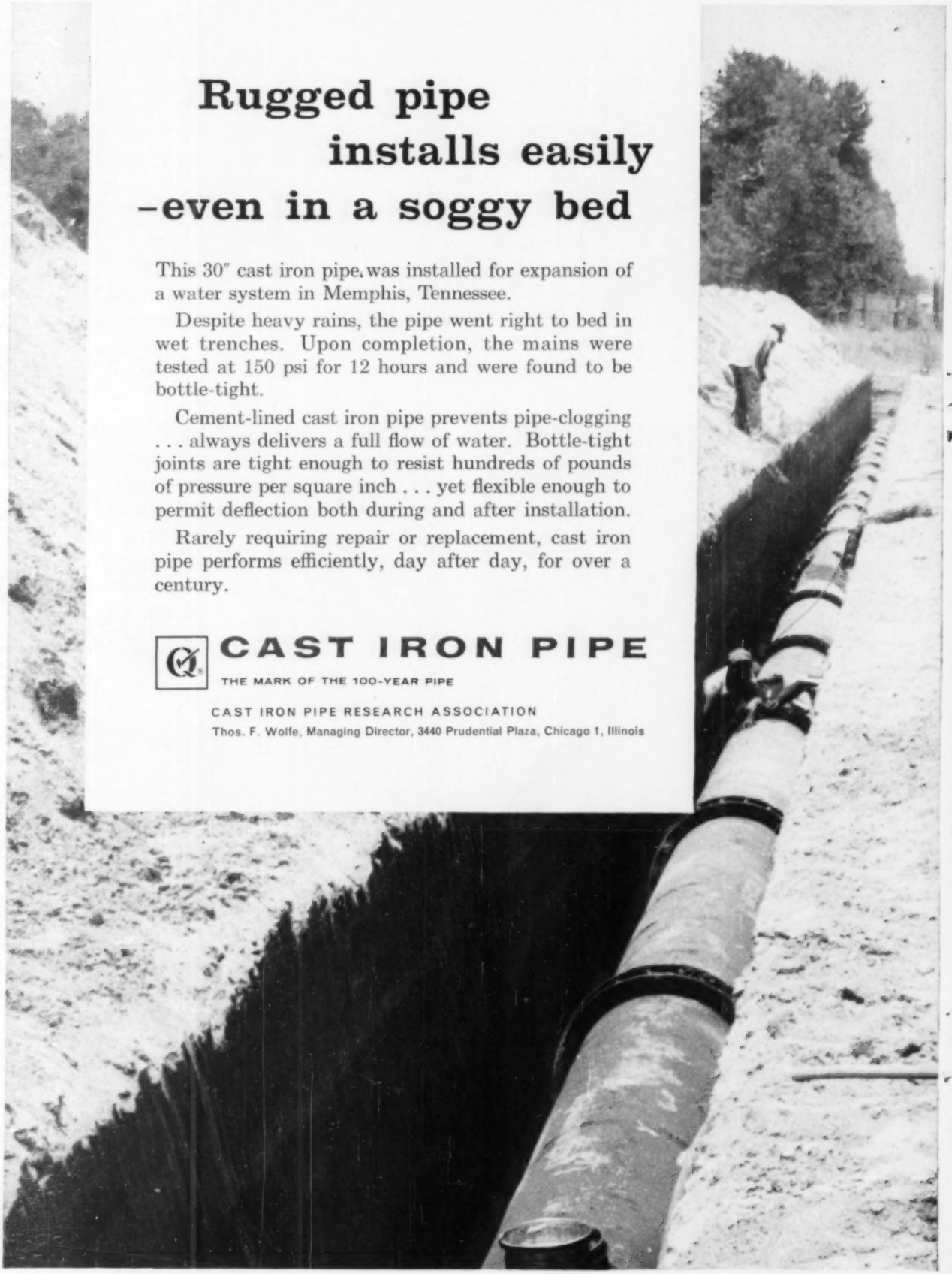
Rarely requiring repair or replacement, cast iron pipe performs efficiently, day after day, for over a century.

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

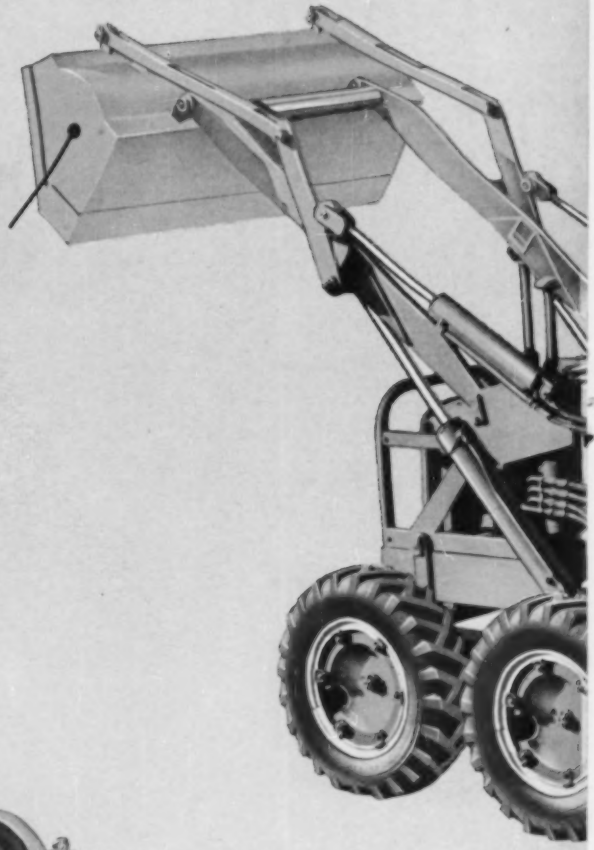
CAST IRON PIPE RESEARCH ASSOCIATION

Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois



ALLIS-CHALMERS D

58 NET ENGINE HP

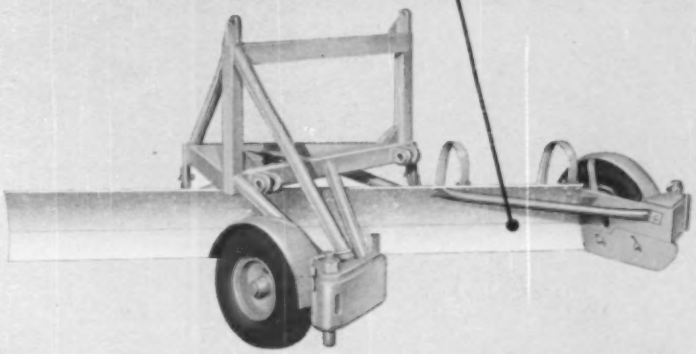


1 HANDLES UTILITY LOADING

Does the thousand and one jobs that usually require special machines. Rugged ¼-yd bucket operates hydraulically. Lets you load out excess material while finishing work is going on.

2 MAINTAINS SHOULDERS IN ONE SAFE PASS

Lets one man rebuild and maintain miles of shoulder every day. Grader blade levels shoulder, fills voids — maintainer blade spreads excess material — trailing striker blade clears highway edge — all in ONE PASS, with the machine safely off the road. The ¼-yd bucket is interchangeable with the maintainer.



ONLY 4-IN-1 GRADER

The Allis-Chalmers Model D grader and its attachments give you timesaving, money-saving flexibility . . . not only for grading, but for loading, scarifying, and maintaining road shoulders, too.

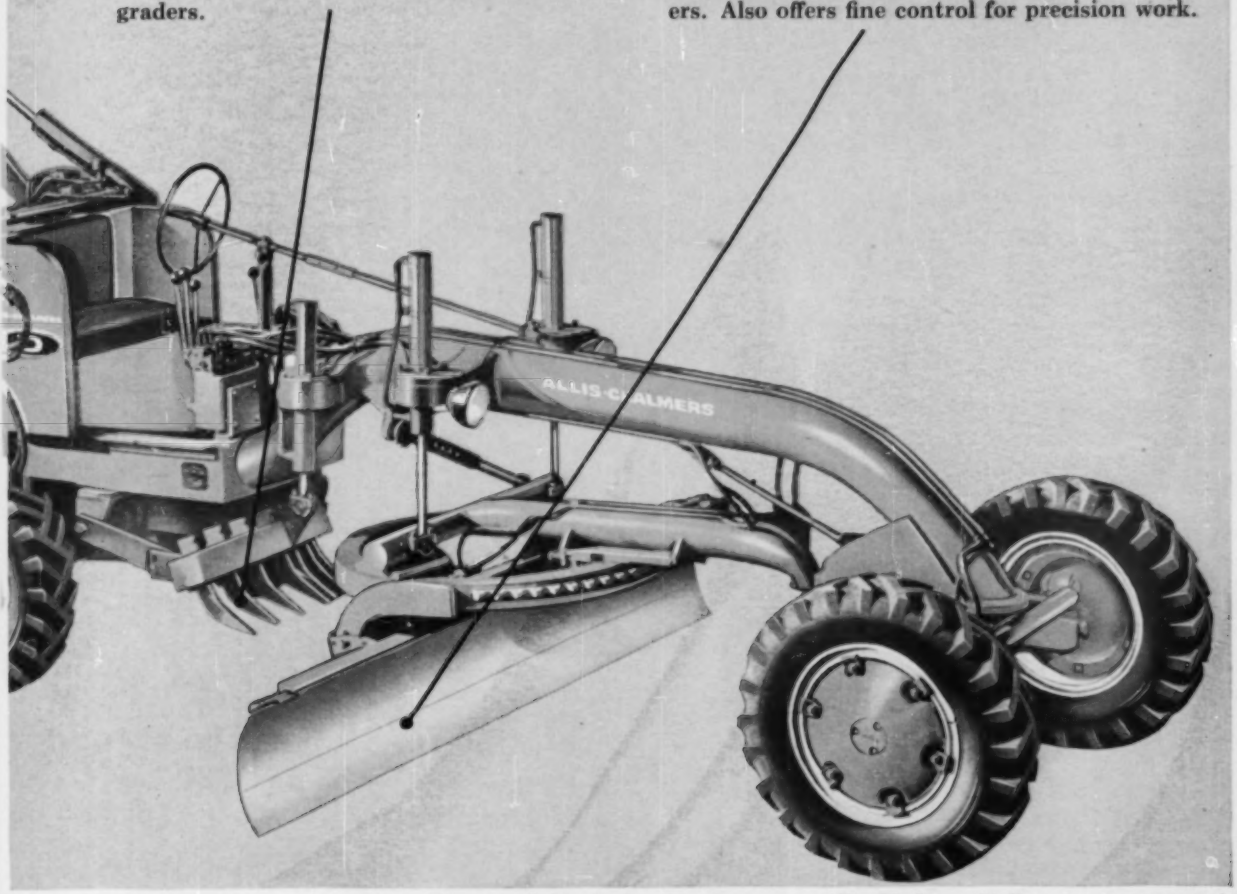
move ahead with

SCARIFIES TOUGH, HEAVYWEIGHT MATERIALS

3 Seven-tooth design cuts 27¾-in. swath, with 4,900-lb penetrating force. Mid-ship-mounted to allow good steering while working. Will scarify material on which you might expect to use the big graders.

BIG GRADING CAPACITY WITH Roll-Away MOLDBOARD

4 Designed to lift and roll loads. Handles more dirt than ordinary blades, yet requires no additional power. With this exclusive moldboard, the Model D will roll loads as big as those you're now pushing with much bigger graders. Also offers fine control for precision work.



Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.

YOU CAN BUY

Up front, the D is a grader — capable of tackling all your road and street work. Attachments add many practical uses — let you put a D on other jobs when grading is finished. Flexibility like this is bound to make a tax dollar go further.

A Model D costs less right from the start. It's scaled to your budget — so low, in fact, that you can own two or three for what a big machine would cost.

You're invited to personally check the D's ability to handle your community's jobs. Your dealer will arrange a demonstration.

Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ROLL-AWAY is an Allis-Chalmers trademark.

ALLIS-CHALMERS AC

power for a growing world

CHEVROLET IFS "WALKS" WHEELS OVER TRUCK-BUSTING BUMPS!

IFS = FRONT INDEPENDENT SUSPENSION

Chevrolet truck wheel action on rough road surface, as depicted by 4-stage stop-action photography.

"WALKING WHEELS" KEEP CHEVY IN COST-SAVING SHAPE!

CHEVROLET I F S PROTECTS YOUR PROFITS THESE THREE WAYS:

I F S = FRONT INDEPENDENT SUSPENSION

1 *Rides down high maintenance costs.* When a bump looms up, Chevy's independently suspended front wheels "walk" right over it. Most road shocks and jolts never reach the chassis, cab or body. The truck rides *smoothly*, takes less of a beating, stays in cost-saving shape longer. Your income doesn't dribble away in big repair bills. And you don't lose money through excessive downtime, either.

2 *Rides cargoes over rough spots with less damage . . . minimum loss.* Thanks to those same "walking wheels," loads don't do much bouncing in the body of a '61 Chevy truck. That means you don't have to contend with undue cargo damage that eats away at your earnings. (Chevy's load-tailored *rear* suspension helps protect cargoes, too.) This sure protection for fragile loads—and profits—is standard in 1961 Chevrolet trucks of every weight class.

3 *Rides drivers through with less fatigue—for tighter schedules.* Wait till you see how Chevy front wheel action works to eliminate tiring shimmy and steering-wheel fight. It means that the man at the controls can stay there longer with less fatigue—stay on schedule and do a bigger day's work. (Another reason you can look for faster schedules is that Chevy's bump-beating wheel action allows faster safe speeds on rough roads.)

That gives you an idea of how Chevy Independent Front Suspension works to move you ahead in the money-making department. And it's available in 165 Chevrolet models for '61, from new Corvair 95's to 36,000-lb. GVW tandems. Check it out with a demonstration ride at your Chevrolet dealer's, sometime soon. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

INDEPENDENT FRONT SUSPENSION

In Chevy, each front wheel, suspended independently, is free to step cleanly over bumps (see left). Each works smoothly to reduce objectionable jolts so characteristic with I-beam axle design (right). Working with load-tailored rear suspensions in every weight class, I.F.S. provides the basis for profit-protecting performance that's unmatched by I-beam axle trucks.

I-BEAM AXLE DESIGN

1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

DES MOINES, IOWA

The Des Moines Division of Public Works' new D6B works on gravel pit excavation, street construction and maintenance, and sanitary landfill—jobs that call for power and speed from a medium-sized crawler tractor. Heavy Equipment Supervisor John Porter, a 20-year veteran of Des Moines Public Works, says, "We recommended the Division buy a D6 because of two main reasons: we needed that size machine for its mobility, and we needed the dependability we always get from Caterpillar."

HOW TWO COMMUNITIES CUT COSTS WITH NEW CAT-BUILT MACHINES

GLENVILLE, N. Y.

The town of Glenville, New York, solved its nagging garbage and trash disposal problem with efficient, economical sanitary landfill. The town's 944 Traxcavator spreads, compacts and covers the refuse. Mr. L. O. Dunn, Town Councilman, states, "Economy and long life of our other Cat equipment were big factors in the selection of this machine. It has proved to be good for this job—and a versatile all-around loader in a one-man operation."

Your community or county, too, can save time and money with modern earthmoving or material handling equipment—and savings are even greater if it is Caterpillar-built. Tracks *or* wheels, important advances in power and operating ease team with traditional Caterpillar reliability and minimum maintenance requirements to squeeze extra work from your tax dollars. Consider, for example, advantages offered by the two machines shown here:

93 HP D6B Track-type Tractor 25% more lugging ability than former model. Adjustment-free fuel system permits use of economy-type, high-energy fuels. Dry-type air cleaner takes only five minutes to service. Forward-reverse lever saves time and effort in dozing and landfill work. Lifetime lubricated track rollers *never* need attention until rebuilding. Exclusive oil clutch delivers up to 2000 hours adjustment-free service. New hydraulic system (optional) with under-the-hood mounting of pump and tank frees front and rear of tractor for attachments, provides up to three hydraulic circuits. Matched tools for many jobs.

105 HP 944 Wheel-type Traxcavator More than seven years of testing have gone into this new excavator-loader. Choice of diesel or gasoline engine. Clean design for safe, convenient operation. Power Shift Transmission for fast response to load change. 41° bucket break out for heaped loads, stable design for smooth, safe operation, extra bucket reach to place loads fast, easily. Unit construction for easy servicing. Special attachments, buckets, including side dump, tailor machine to job. Roomy cab (optional) with large windows helps keep operator efficiency high. Two other sizes are available: 922—80 HP and 966—140 HP (only flywheel horsepowers listed).

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

Does your community have a refuse disposal problem? One answer is found in the new sanitary landfill movie, "A Decent Burial." It's informative, entertaining... ready to be presented by your Caterpillar Dealer. Call him today.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

DEPENDABLE MACHINES GET THE JOBS DONE FIRST

A Handy Answer To Odd-Lot Paving

A Ram spreader attachment for our H-90 Hough Loader has proven most useful, especially for paving small or congested areas. The mobility of this equipment as well as its ability to lay asphalt or base rock to any width or depth required makes it a great time saver.

Like all growing cities, El Paso faces the problem of repairing all paving cuts made throughout the city by plumbing contractors and the local utility companies. City forces make these repairs in all cases and we bill the individual making the cut for this service.

We excavate all cuts to a depth of 13½ inches and replace the material with 12 inches of select base material and 1½ inches of hot mix. By doing this work with our own crews under the close supervision of a well-qualified inspector, we have held patch failures to a minimum. During 1959 our crews repaired 2,866 utility cuts in this manner. Fortunately, the Street Department has been able to purchase the necessary equipment to properly carry out this program.

Our climate permits us to maintain streets throughout the year, as the schedule permits and the material is available. The work is performed under the over-all direction of C. W. Davis, City Engineer.

Although resurfacing and patching as mentioned represents only a portion of our over-all maintenance program, we feel it is by far the most important function.

The rapid growth of El Paso, Tex., in the past ten years has resulted in the need for an extensive street-maintenance program. At present the city covers 114 square miles; of its approximately 750 miles of streets, 600 are paved.

The Street Department's prime concern is to keep these paved streets in first-class condition. To do this, the Street Department foreman, along with the Engineering Department inspectors, makes periodic inspections. A report is then compiled of all sections needing attention, with a recommendation as to the type of maintenance required—either complete resurfacing or patching if only a small area is involved.

This front-end loader is a big time saver when it comes to repaving small or congested areas.

In 1959 city forces and equipment resurfaced 187 blocks with 1½ inches of hot mix. We purchase the material from a local contractor on a bid basis. Along with regular paving equipment, the crews utilize a city-owned Littleford heater-planer, prior to resurfacing, to remove extremely rough sections of old asphalt, especially where a drainage problem would arise from the additional material being placed on the street. We also use this machine to good advantage where excessive cracking made some of our older streets almost impossible to resurface.

R. W. Hickok
Superintendent of Streets
El Paso, Texas

Logical Asphalt Pavement Design—Promised

The empirical method may soon give way to rational design of multi-layered asphalt-pavement structures. Such a change will end the host of nettlesome problems embodied in the use of empirical methods when trying to achieve uniformity of design.

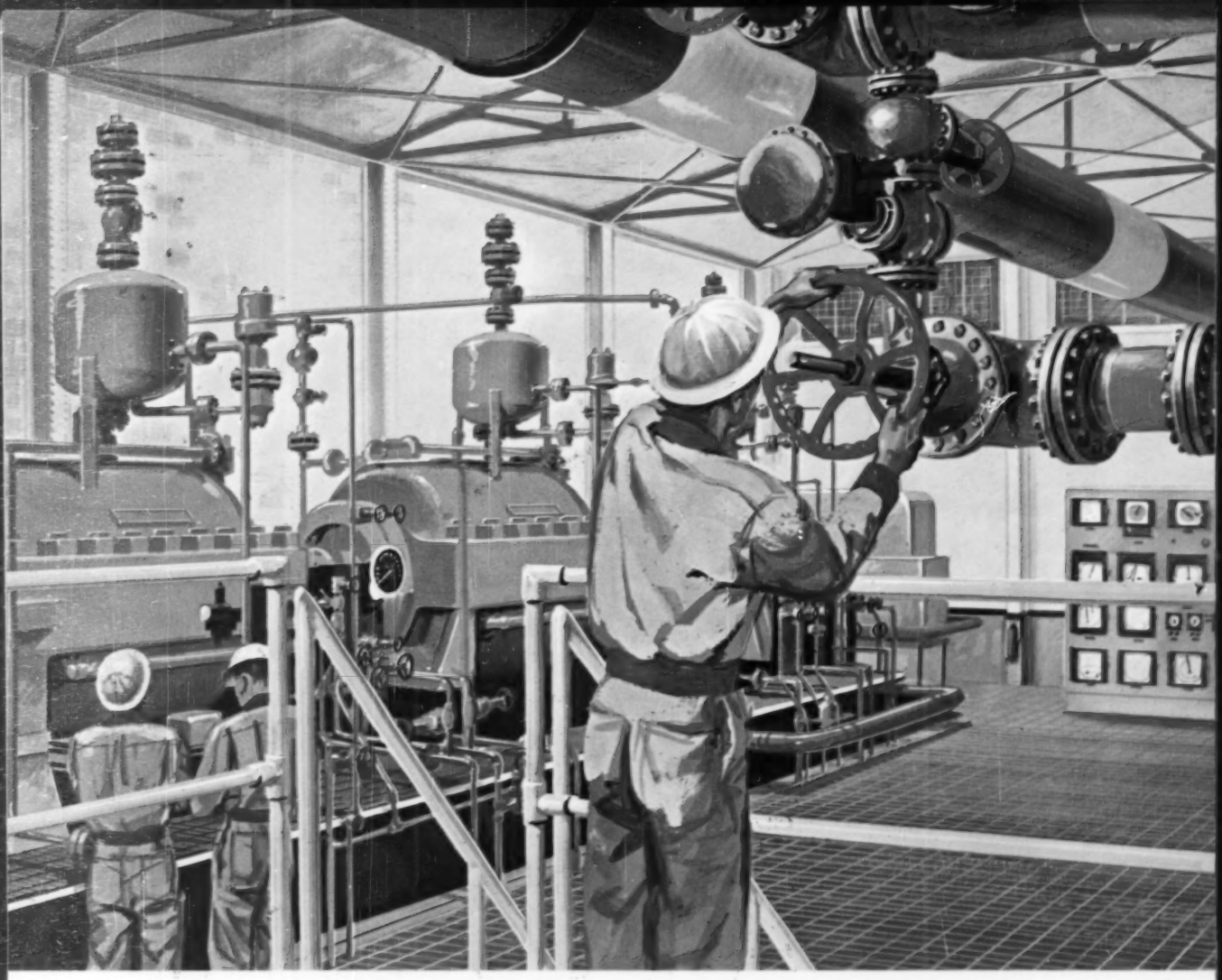
To achieve this goal, the Asphalt Institute recently established a special board of study to evaluate and analyze data developed in the AASHO Road Test, now nearing its end at Ottawa, Ill., and in other road tests conducted here and abroad in the last decade. The study program, to cost about $325,000 over a 30-month period, includes a comprehensive international conference on asphalt-pavement structures to be held in 1962.

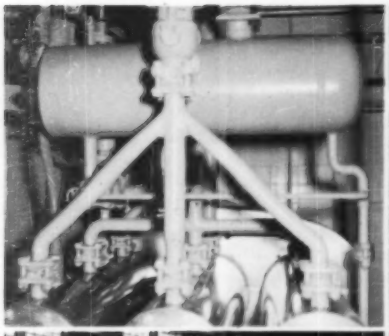
Plans also call for cooperative research projects at two major state universities to complement the work of the study board.

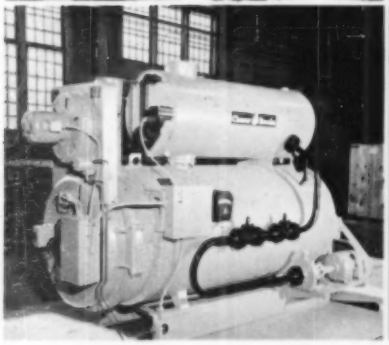
The Asphalt Institute has had thickness design curves and procedures in general use for several years which, to date, have proved adequate. Data from the AASHO Road Test, although not complete, indicate that the Institute thickness design curves are substantially correct, thus setting the stage for developing design formulae.

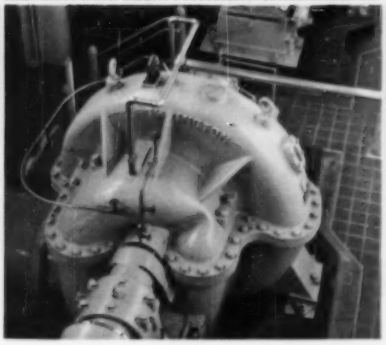
Dr. J. E. Buchanan, president of the Asphalt Institute, announced that the Institute's AASHO Road Test project engineer, Fred N. Finn, will head up the Board of Study. The study group will consist of statisticians, engineers, technicians, consultants and asphalt technologists from Institute member companies.

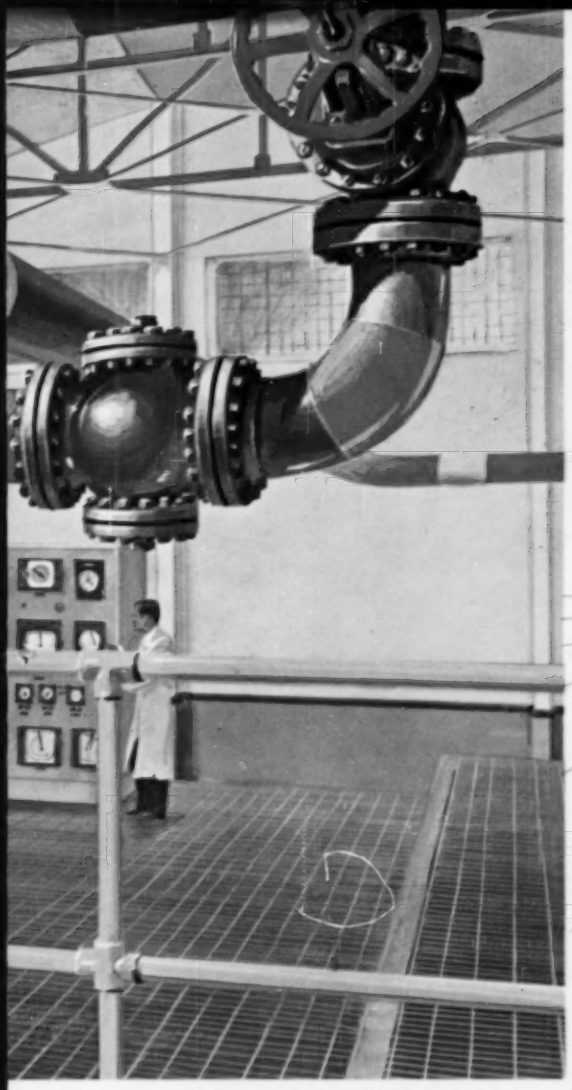
Upon completion of the work, the Board will publish two final reports, one aimed at engineers and concerned with theoretical aspects, the other a semi-technical document for circulation among highway users. ◄◄











Rust-Oleum

NEW COLOR HORIZONS

System

HERE is a modern, functional *system* that combines four important points. (1) the ability to stop rust, (2) modern color harmony, (3) durability to last and last, (4) ease of application. From machinery, equipment, and structural steel to tanks, steel fences and metal sash – the Rust-Oleum New Color Horizons System can provide lasting beauty in the colors of your choice. Ask your Rust-Oleum Industrial Distributor, together with your Rust-Oleum Factory Specialist, to make a survey of your plant and provide complete recommendations. Rust-Oleum Industrial Distributors maintain complete stocks for prompt delivery in all principal cities of the United States, Canada, and in many countries around the world.

Rust-Oleum, in its various forms, can also save you time and money on problems like these: Heat Resistance, Water Resistance, Chemical Resistance, Coating Galvanized Metal, Speedy-Dry Coatings (less than thirty minutes to dry).

PROVED THROUGHOUT INDUSTRY FOR OVER THIRTY-FIVE YEARS

RUST-OLEUM®

See our catalog in Sweet's.

STOP RUST by applying Rust-Oleum 769 Damp-Proof Red Primer directly over the sound rusted surface

Save time, money, and metal. Brush Rust-Oleum 769 Damp-Proof Red Primer right over the remaining sound rusted surface after scraping and wirebrushing to remove rust scale and loose rust. **Specially-processed** fish oil vehicle penetrates rust to bare metal as proved in radioactive tracing studies.

STOPS RUST!®

Distinctive as your own fingerprint. There are imitations, but only one Rust-Oleum.

Insist upon industry-proved Rust-Oleum. Accept no substitute.

You take the brush! Try a free test sample!

ATTACH TO YOUR LETTERHEAD

RUST-OLEUM CORPORATION
2985 Oakton Street • Evanston, Illinois

At no cost or obligation, please send me:

- ☐ New full-color catalog on New Color Horizons System and specialized Rust-Oleum systems, including color charts and applications.
- ☐ FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer.
- ☐ Please have your representative contact us to discuss a plant survey.

If the men who buy refuse collection units would ride the routes, they'd buy ROTO-PAC every time!

AND HERE'S WHY—

We don't waste time standing around waiting for the hopper to be emptied, because...

ROTO-PAC IS CONTINUOUS

We do less lifting because some stops now use power-handled Containers as big as 6 yds.

ROTO-PAC IS EASIER

We get through quicker and get home earlier, because...

ROTO-PAC IS FASTER

Get the ROTO-PAC story–

including a Container System which can be added when desired. Same unit handles BOTH manual and container loading.

CITY TANK CORPORATION

(A Unit of Hagan Industries, Inc.)

CULPEPER, VA. • VAlley 5-8356

Avondale Marks Advances

Avondale, Ariz., population 6,000, jotted down its gains of last year under the council-manager form of government. The city incorporated 13 years ago and adopted the council-manager form in June 1959. The achievements recorded since then are substantial. The city:

- **Prepared and adopted its first performance-type budget.**
- **Remodeled the police department and renovated the city hall, improving both efficiency and appearance.**
- **Placed a new sewerage system in operation and opened a new sewage purification plant in cooperation with its neighboring community of Goodyear.**
- **Appropriated funds for a new city library.**
- **Starting a major paving improvement district project aimed at paving all residential streets in town, with most of the work being done by city forces.**
- **Purchased a new Underwood Account-Master billing machine which reduced the time needed to bill water, sewer, garbage and other accounts from three weeks to a matter of only three days.**
- **Adopted building, plumbing and electrical codes to control and regulate construction.**

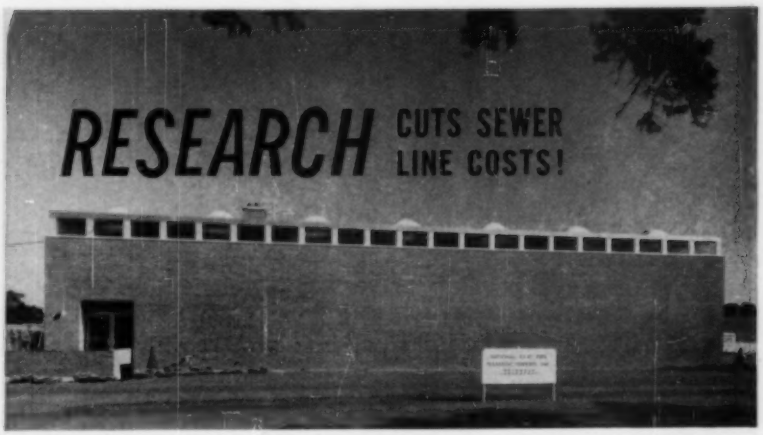
Avondale was incorporated on Dec. 16, 1946. It has no city property tax. L. R. Turner is Mayor. Albert R. Pierce is City Manager. Mr. Pierce is an ex-newspaper man who studied municipal administration at Arizona State University, and later became administrative assistant to the city manager in Phoenix.

The present city council assumed operations of the Avondale municipal government after the previous city clerk had been sentenced to the penetentiary for embezzlement of the city's funds over a ten-year period. ◄◄

15 hp per Square Foot

Lebanon, Ohio, recently stepped up its current power output in its municipal electric plant by purchasing a 16-cylinder, 4,480-hp diesel-electric generator.

The new unit is the fourth to be bought by the village from Cooper-Bessemer in 20 years. This model LSV-16-GDT is distinguished for its compactness, providing 15 hp for every square foot of floor space. ◄◄



The Clay Pipe Industry's research has pioneered dramatic new developments, making production and installation of lifetime Vitrified Clay Pipe more efficient and effective.

For example, Clay Pipe Industry research discovered the revolutionary resilient compression joints which are now offering important savings in installation time and cost to users of lifetime Vitrified Clay Pipe sanitary sewers.

Other important tests are now going on at the Crystal Lake facility, by contract at colleges and universities all over the country, and at the modern laboratories maintained by individual Clay Pipe manufacturers.

One experiment that promises to have far-reaching effects: detailed, year-long observations of root penetration of 16 separate sewer pipe joints. Others include shear load studies of both pipe material and joints, development of new, less expensive jointing materials and techniques, exhaustive analyses of competitive products, flow-coefficient studies, and various tests aimed at improving the clay pipe itself.

Results of the most significant of these tests will be announced as they become available.

Under the direction of A. J. Reed, NCPMI Vice President and Director of Research, new breakthroughs in manufacturing and uses of Clay Pipe are being made, offering greater, more confident service to those who specify and use lifetime Vitrified Clay Pipe.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
914 20th Street, N. W.
Washington, D. C.

Please send me full details on the new factory-made compression joints on Clay Pipe.

(name)

(company)

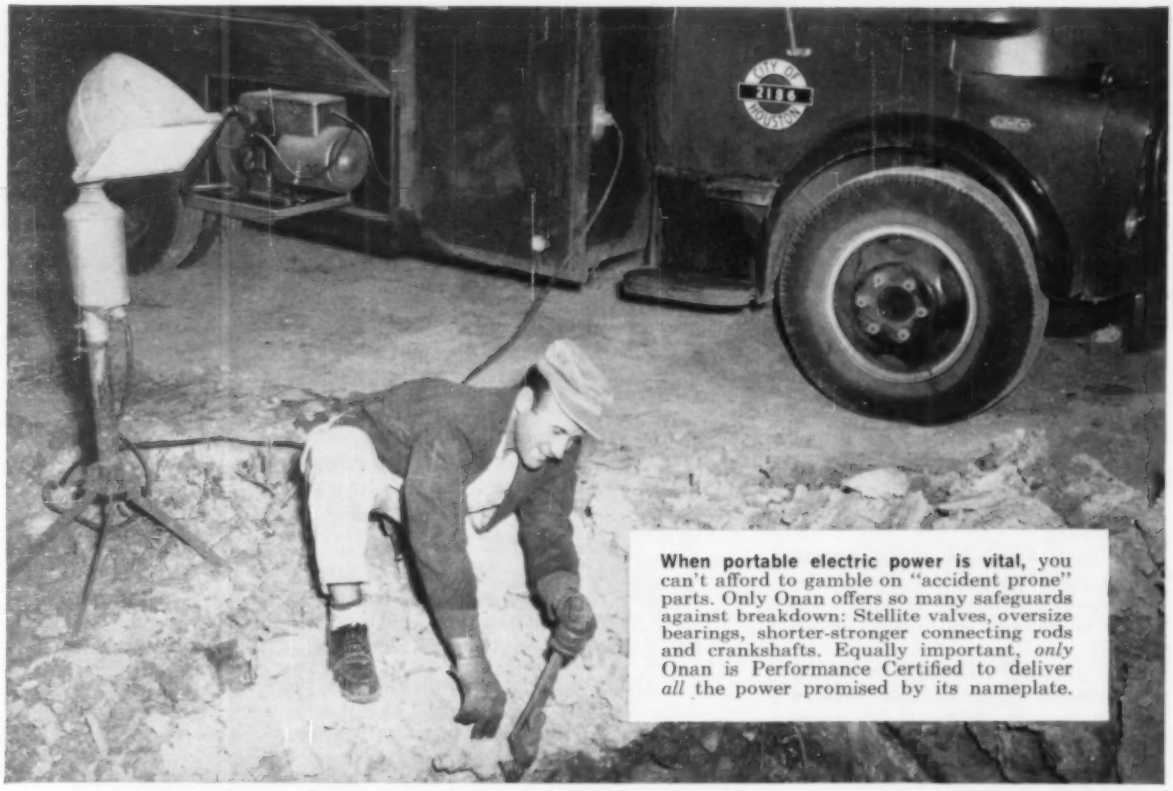
(street address)

(city and state)

B-1C23 AC

COMPRESSION SEALED, VITRIFIED
CLAY PIPE
IMPERVIOUS
THE STANDARD in SANITARY SEWERS

NATIONAL CLAY PIPE MANUFACTURERS, INC.
Washington, D. C.



When portable electric power is vital, you can't afford to gamble on "accident prone" parts. Only Onan offers so many safeguards against breakdown: Stellite valves, oversize bearings, shorter-stronger connecting rods and crankshafts. Equally important, *only* Onan is Performance Certified to deliver *all* the power promised by its nameplate.

Only Onan is certified to give you all the power promised by its nameplate

It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that shortchanges you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
Onan

World's Leading Builder of Electric Power Plants

Onan

ONAN Division, Studebaker-Packard Corporation, 2535 University Ave. S. E., Minneapolis 14, Minn.

Unconventional but Workable

The town of Poland, N. Y., used an old railroad tank car to solve a drainage problem. Purchased from a tank car firm in Warren, Pa., for less than $500, it saved the town quite a few dollars when compared to the cost of conventional culvert materials.

Though it is considered no longer usable as a tank car, Town Supervisor Harold Ericsson estimates its life expectancy as a culvert at 30 years. Here an employee of the highway department uses a Caterpillar D7 tractor to complete the back-filling operation. ◂◂

Garbage Grinding and Sewage Strength

Records of the Minneapolis-Saint Paul Sanitary District over the past 20 years indicate that garbage grinding has considerable effect on sewage strength. Table I illustrates the increased sewage flow and strength over the 21-year period of 1939-1959.

Table II shows the increase in sewage volume and strength in terms of BOD by averages for five-year periods. While the sewage volume increased approximately 10 mgd in each five-year period, sewage strength in terms of BOD remained fairly constant for the first three five-year periods and then increased sharply.

The 1953 Minnesota Legislature passed an act prohibiting the feeding of uncooked garbage to hogs. Since that time there has been an increasing number of garbage grinders installed in hotels, restaurants, and food-processing plants as well as in homes. About that time, the City of Saint Paul also enacted an ordinance requiring the installation of either a garbage grinder or an incinerator in all new dwelling construction.

KERWIN L. MICK
Chief Engineer and Superintendent
Minneapolis-St. Paul Sanitary District

Table I
SEWAGE FLOW AND STRENGTH
in terms of population equivalent

Year	Average Flow mgd	Sewage Strength—Population Equivalent Incoming Raw Sewage	Plant-Effluent
1959	149.9	1,725,000	1,123,000
1939	102.9	1,038,000	634,000
Increase	47.0	687,000	489,000
Percent	45.7%	66.2%	77.2%

Table II
AVERAGE SEWAGE FLOWS AND STRENGTH
in five-year periods

Period	Sewage Flow mgd	Sewage Strength in ppm			
		Raw Sewage	Plant Effluent	Raw Sewage	Plant Effluent
		As BOD		Suspended Solids	
1939-43	110	190	115	291	92
1944-48	121	193	116	284	92
1949-53	131	190	115	263	77
1954-58	141	234	149	289	90
1959	150	235	153	297	95

NOW YOUR STREETS CAN BE WAYNE-CLEAN

...with the exclusive Wayne Rental Plan

Now you can *rent* the Wayne Street Sweeper of your choice, pay the rental with operating funds... and actually *own* your Wayne at the end of the rental period for just $1.00! *There's no need to seek special appropriation, no capital investment required!*

This Wayne Rental Plan—for any city of any size—is the simple and convenient method of starting your own street sanitation program. You can save enough on labor alone to pay the nominal rental... your city's streets are kept sparkling clean... and you have years of additional service from your rugged, dependable Wayne.

Before you invest in any sweeper equipment or program, check with Wayne. Send for the brochure outlining the exclusive Wayne Rental Plan for municipalities. It's yours for the asking... ***WRITE TODAY!***

WAYNE Manufacturing Co.
2436 EAST LEXINGTON STREET
POMONA, CALIFORNIA
Send me details on the Wayne Rental Plan

Name _____

Title _____

Street _____

City _____ Zone ___ State ___

WAYNE MANUFACTURING CO.

THE WORLD'S LEADING MANUFACTURER OF
POWER SWEEPERS FOR CITIES AND INDUSTRY

POMONA, CALIFORNIA
CHICAGO, ILLINOIS
NEWARK, NEW JERSEY

Export: Henry R. Jahn & Sons, Inc., New York City

PARKING LOTS

AIRPORTS

SIDEWALKS

other

Look at the Ways Wayne Can work for your City!

Dirt and dust don't stop at the curb—they can mar the good looks of your city in a dozen public places!

But wherever debris accumulates, there's a Wayne Power Sweeper with the right capacity, designed and engineered to dig it out *fast*—to do the most economical and efficient sweeping job your city can enjoy.

Find out how you can save manpower...save time...and get municipal housekeeping done *better*, for less. *Write for the Wayne Power Sweeper Brochure—yours for the asking!*

WAYNE MANUFACTURING CO.
2436 E. LEXINGTON ST., POMONA, CALIF.
POMONA • CHICAGO • NEWARK

Tank Design Cuts Costs Three Ways

The design of the new 10,000,000-gallon water tank at Kennewick, Wash., includes three cost-saving factors:

- **prestressed-concrete construction resulting in thinner wall sections.**
- **construction of a portion of the tank below grade.**
- **incorporation of a timber-supported corrugated-asbestos roof.**

The top of the wall of the 248-foot-diameter tank is 19 feet above the top of the footing while the floor slab is ten feet below the footing.

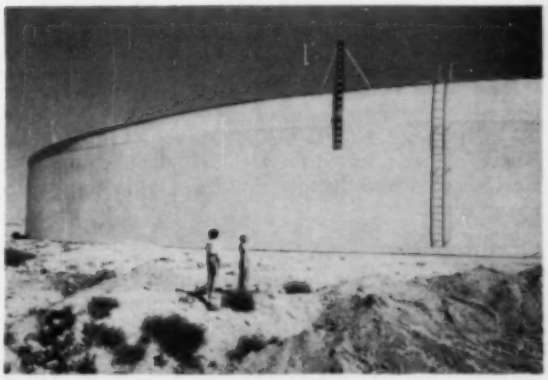
Shaped like a saucer, the sloped portion of the floor joins the wall footing. Nine-inch-thick reinforced-concrete vertical sections make up the wall. Plastic waterstops, embedded in the concrete to extend across and completely close the joints, form water-tight seals between the wall sections and at the joint between the wall and footing.

Prestressing by wrapping with steel wire under tension enables the relatively thin wall to withstand the outward force of the tank contents. This prestressing consists of three layers of wire wound around the bottom two feet of the tank, two layers for the next ten feet and one layer for the remaining seven feet. A Preload self-propelled wire-winding machine drew the wire from 0.192 to 0.172 inches in diameter as it traveled around the tank, thus applying an inward force to prestress the wall. These wires were later covered with pneumatically applied mortar.

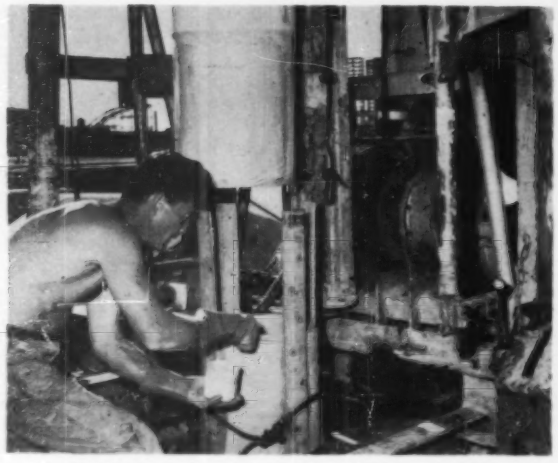
Design calculations for the roof include a dead load of 11.5 pounds per square foot and a 40-psf live load. Timber beams and perlins supported on concrete columns 18½ feet on centers hold up the corrugated asbestos sheets. Since the structure is in an earthquake area, 52 concrete anti-buckling blocks, 12 inches on each side, were placed along the base of the inside circumference of the wall after prestressing. They are doweled to the floor and are spaced on approximately 15-foot centers.

The Preload Company, New York, N. Y., designed the structure and performed the prestressing work. The Lewis Hopkins Co. of Pesco, Washington, was the general contractor.

TIM DEJONG
City Engineer
Kennewick, Wash.

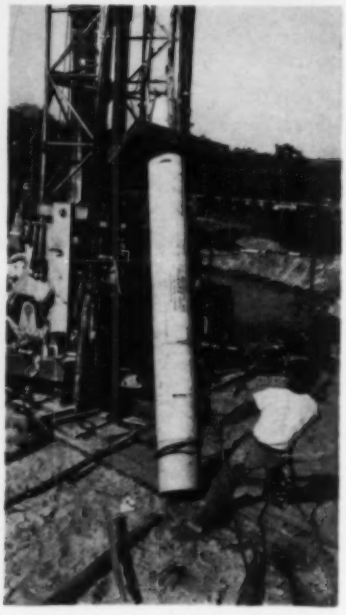


This prestressed-concrete tank, 248 feet in diameter, adds 10,000,000 gallons of storage capacity to the Kennewick water system.



Epoxy resin and stainless steel screws bind the sections together; ropes attached to the metal ring guide the bottom casing.

A workman guides one section of the well casing into place over the hole.



Aquarium Drills Salt-Water Wells

The famous New York City Aquarium at Coney Island has two of the few municipally operated salt-water wells in existence. The Aquarium is widely known largely due to the efforts of Director Christopher W. Coates.

One of Dr. Coates' responsibilities is to see that the sea-going animals, birds and fish have the best possible environment. They must have pure sea water of the correct density, salinity and temperature. He cannot obtain such water from the ocean off Coney Island because it varies with the flow of fresh water from the Hudson, Hackensack and Passaic Rivers.

However, he can get it from a salt-water aquifer below ground. The consulting engineers, Thomas M. Riddick & Associates of New York City, recommended drilling a well to tap this aquifer. To be sure that the well casing selected would not corrode or contaminate the sea water with metallic ions, the engineers recommended using 12-inch diameter Transite asbestos-cement pipe, manufactured by Johns-Manville. This material had never before been employed for this purpose.

Each 13-foot casing length connected to the adjacent one with four stainless steel plates 30 inches long by 2½ inches wide, bent to the outside radius of the pipe. Each plate was drilled for eight self-tapping stainless steel screens and further bonded to the pipe with epoxy resin.

Construction

The contractor began construction by centering one casing length in the hole. On it he placed a second length after "buttering" it with epoxy. He then inserted the screws for the top section, checking alignment at the same time. A steel ring was placed around the second length to be lowered into the hole. Twin flexible cables ran through loops attached to opposite sides of the ring to steady the casing and helped to support the weight of the assembly. After the casing was assembled and the screen installed, the annular space around the casing and screen was filled with fine gravel.

The first well terminates at 193 feet, the second one at 209. Each well yields 400 gallons per minute although it is possible that the pumping unit may later be replaced with a 30-hp motor which will increase capacity to 1,000 gpm.

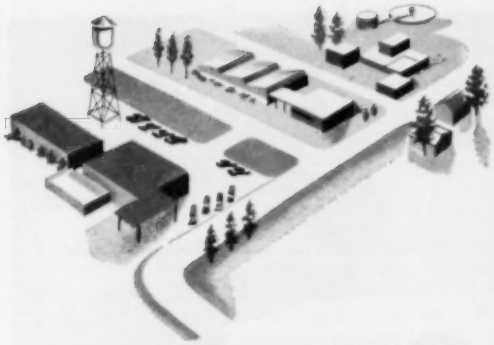
The entire operation, from the suspending of the first section of casing to the insertion of the Johnson screen, took only 2½ days.

All these precautions mean that Ookie, the baby walrus, the harbor seals and all the other mammals, birds and fish inhabiting the Aquarium will have a healthy environment and be able to thrive despite their captivity. ◂◂

New Swimming Pool Filter Standards

Standards for the design and testing of diatomite earth filters for swimming pools have been developed and approved by the National Sanitation Foundation. A test program will begin early next year, leading to the NSF Seal of Approval for equipment that meets these specifications.

The U. S. Public Health Service will produce a recommended ordinance that state and local governments may enact to control the design, installation, operation and maintenance of swimming pools. USPHS is working through a joint committee of the National Sanitation Foundation and the National Swimming Pool Institute. ◂◂



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PRISMO

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Springfield Features Its Snorkel

The day after the city of Springfield, Ill., dedicated its FWD "Snorkel" aerial rescue unit, the impressive aerial rescuer paraded through downtown Springfield to the grounds where the big Illinois State Fair was in progress. Chief Saunders remarked, "The department could make a fortune if it sold rides on the Snorkel during the Fair."

The custom-built chassis, built by the FWD Corp., Clintonville, Wis., is equipped with a five man cab-forward and power steering. The 217-inch-wheel-base unit has three 2½-inch inlets at the rear, a 2½-inch inlet and a 1½-inch outlet on each side.

The Snorkel apparatus, manufactured by the Pitman Manufacturing Co., Grand View, Mo., can raise a fire fighting team 65 feet up in the air for rescues. A 3½-inch jointed pipe on the boom leads to a turret nozzle at the basket where firemen can throw water hundreds of feet from a hydrant or booster tank.

Firemen at the end of the 65-foot folding Snorkel boom use a simple control handle and bellows to raise, lower, revolve left or right and extend the boom and basket. One man handles the basket and boom and a second controls the water nozzle or directs rescue operations.

Four hydraulic stabilizers, two on each side of the aerial rescue unit, can be extended or retracted with the flip of a switch, and are used to level the apparatus while working on hills.

After two days as the "Pride of Springfield," the "O'Hara Snorkel" retired to Fire Station No. 1, ready for work, day and night.

The work came soon, on September 28, when the local Salvation Army building was involved in a severe fire. It would have been a total loss except for the snorkel which gave a blue-ribbon performance.

FREDERIC S. O'HARA
Commissioner of Public Health & Safety
Springfield, Illinois

In the basket of Springfield's 65-foot Pitman Snorkel, outside the Illinois Capitol are (left to right) Bob Rasmussen of the Illinois FWD Truck and Equipment Co.; Governor William G. Stratton; Mayor Lester E. Collins of Springfield; Commissioner of Public Health & Safety Frederic S. O'Hara; and Fire Chief Francis J. Saunders, Sr.

The Best in the U. S.

Recently, for the third time, Miami's Harley-Davidson motorcycle drill team, commanded by Sgt. C. T. Renegar, received the "Best in the U. S." award presented by the American Legion.

Township to Radio Car

Inexpensive Citizens Band two-way radios developed by the Radio Corporation of America are "on duty" with the Plains Township Police Department in Pennsylvania's anthracite region to maintain contact with a roving patrol car.

"Previously," said Police Chief Joseph Sherin, "the department's cruiser had to make periodic trips to headquarters for a check of phoned-in messages." Said he: "I don't know how we managed to get along without two-way radio before. The cost of the Citizens Band equipment is so low that virtually any borough or township police department or fire department can afford it."

The Plains Township police radio system employs two RCA Mark VII radio-phones, operating in the 27-megacycle band of frequencies set aside by the Federal Communications Commission for use by the general public as well as business firms and governmental agencies seeking economical two-way radio service with a minimum of licensing requirements. One Mark VII is in police headquarters and the other in the patrol car. The radio-phone measures only 5 by 12 by 8 inches, with four crystal-controlled channels for transmitting and receiving, and a tunable receiver covering all 23 channels in the Citizens Band. The power source can be a 115-volt alternating current system or a 6 or 12-volt battery. ◄◄

13 Steps to Cleaner Surface Water

. . . recommended at the Presidential Conference on Water Pollution

More than 1,000 delegates conferred for 2½ days in Washington to find more effective ways of cleaning up America's surface waters and keeping them clean. The occasion was the National Conference on Water Pollution called by Leroy E. Burney, Surgeon General of the U. S. Public Health Service, at the request of President Eisenhower and Secretary of Health, Education and Welfare Arthur Flemming.

Participants included individuals as well as representatives of local, state, interstate and federal agencies; representatives of agriculture, industry and labor; leaders in the field of environmental health and sanitary engineering; and members of civic, conservation and women's clubs and organizations.

Following several plenary sessions and four concurrent panel discussions, the conferees agreed that the goal of pollution abatement is to protect the capacity of water resources to serve the widest possible range of human needs, and that this goal could be more readily attained by:

Establishing a fixed national policy for planning the comprehensive development of each major river basin or water-resource area which will integrate water-quality control with all water-resource development.

Developing a more systematic approach to the evaluation of water pollution problems to include health, esthetic, and market values.

Enlarging and extending water-quality monitoring programs to determine more adequately the present and future conditions of water-courses in providing for all water uses.

Formulating public policy which will formally recognize the recreational value of water resources as a full partner with domestic, industrial and agricultural values in water-quality management policies and programs.

Giving particular attention to accelerating the collection of information on industrial, agricultural and municipal wastes to facilitate the assessment of the total pollution problem. The Public Health Service should coordinate the collection of this information at the national level.

Immediately expanding the construction of municipal and industrial waste-treatment facilities to keep pace with population and industrial growth and eliminate the backlog of treatment plants by 1970.

Congressional insistence that each federal installation treat its wastes in accordance with the standards used for cities and industries in the area, with the year 1964 recommended as the target date for providing minimum treatment of federal wastes.

Increasing and intensifying the flow of research findings in depth as well as breadth.

The assumption of leadership by the Public Health Service, in collaboration with other public and private agencies, in the collection, compilation and distribution of pertinent data on the toxicity of water contaminants.

Training more engineers and scientists at all levels to advance the scientific, technological and economic conservation of water resources, particularly the control of pollution. This should include recruiting and training qualified personnel at the professional or predoctorate level as well as the post-doctorate level.

Improving methods for measuring pollution-abatement progress, including new parameters which encompass all pollution components and yardsticks for measuring stream quality.

Expanding and sustaining a public information program on the part of public and private agencies so that enlightened public opinion may be brought to bear on the accomplishment, costs, needs, opportunities and problems involving water-quality management.

Adopting a national credo to stress such points as: users of water do not have an inherent right to pollute; users of public waters have a responsibility for returning them as clean as is technically possible; and prevention is as important as the control of pollution.

In addressing the closing session, Secretary Flemming advocated that the Public Health Service continue to administer the federal government's water-pollution-control programs and recommended these steps toward strengthening federal enforcement:

Extend federal jurisdiction to include pollution, damaging to health and welfare, of any navigable interstate stream.

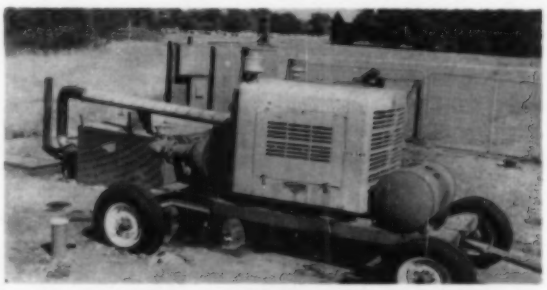
Authority for municipalities, with the consent of the governor or state control agency, to request federal aid in initiating enforcement procedures on pollution that adversely affects their residents.

Congressional authorization permitting the Health, Education, and Welfare Secretary to issue an order (instead of a notice) for abatement of pollution.

Expand the definition of interstate waters to include coastal waters and all waters which flow across or form a part of state boundaries.

In closing, he pledged full support toward implementing the conference recommendations during his remaining days as secretary and his continued support later as a private citizen. ◄◄

Trouble-Shooting Pump



In less than a year's time this standby unit saved the day in two emergencies for the Marin Municipal Water Department, San Rafael, Calif. Trailer-mounted for quick movement by pickup truck, the International UV-540 engine-driven Jaccuzi pump first earned its keep by pumping from one reservoir to another for several weeks until a regular pump could be repaired. When an electrical booster pump on a water line to Hamilton Air Force Base failed, the standby saved the day. In three hours water was moving again, and the pump worked daily, for 30 days, from 8 a.m. to 11:30 p.m. to keep reservoirs filled. ◄◄

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twenty-four hour service

PUMPS • WATER WELLS • WATER TREATMENT

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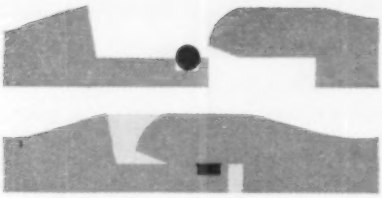
LONG-TERM ECONOMY



DEPENDABLE PIPELINE CLOSURE

A pipeline is only as strong as its joints. In addition to water pressure, American Concrete Cylinder Pipe joints will withstand the forces of expansion and contraction, sudden live loads, traffic vibration, earth settlement and many other forces which act upon a pipeline. ■ Steel joint rings, sized to carefully controlled tolerances, confine an "O" ring rubber gasket by compressing it on three sides in an annular groove in the spigot ring and on the fourth side by the bell ring. The design is such that the gasket, sized to the precise volume required, maintains a positive water-tight seal even while permitting a considerable degree of flexure at the joint. ■ The ease of installation and the reliability obtained through the use of this proved joint are additional reasons why American Concrete Cylinder Pipe means long term economy to the pipeline owner. See an American sales engineer when planning your next project.

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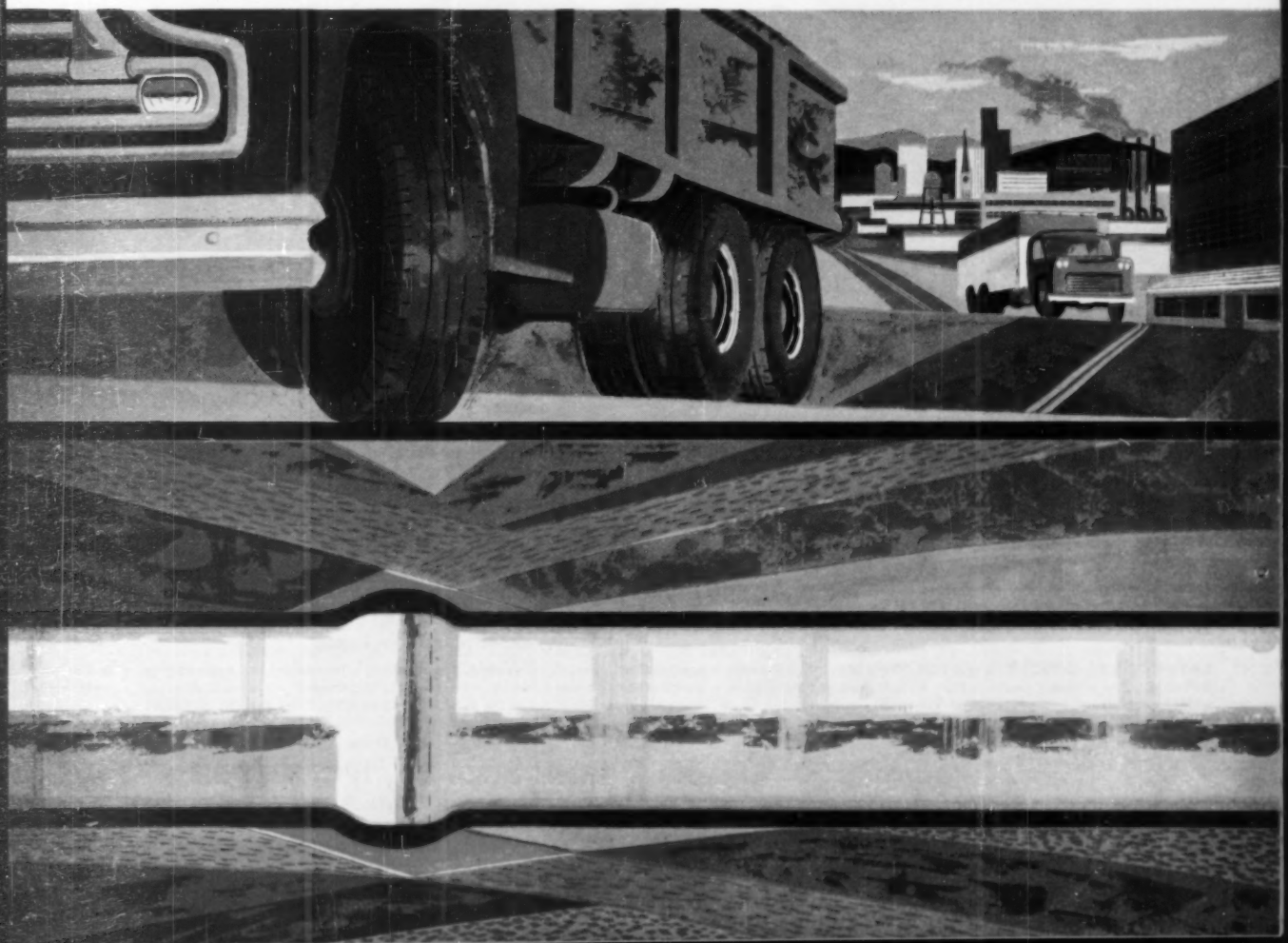


Five men with this compactor-type collection unit serve more houses per day . . .

More Service At Less Cost

Ten months ago our Sanitation Department started using two large compaction-type refuse trailers. Compared to our large open trailers these units are saving the city $28.16 per day and at the same time serve more customers. Cost data and productive time for the two types of collection units were as follows:

DAILY COST

Item	Compaction Type	Open Trailer
Driver	$10.26	$10.26
Loaders or Helpers	33.28	58.24
Equipment	5.20	8.40
Total	$48.74	$76.90

Savings per day $76.90 − $48.74 = $28.16

PRODUCTIVE TIME
(Houses served per day)

Compaction Type	285	Open Trailer	210

Difference 75 more houses per day with five men over eight men used with trailer

Another change in our operation, reported by Superintendent of Sanitation W. H. Hugo, consisted of turning over commercial hauling to a private firm which makes contact with the commercial houses. The city does not handle industrial waste with the exception of small commercial establishments. For this work we utilize a well known detachable container system. We are now studying the possibility of using this system to serve all large buildings and living units, either via private collectors or with the city furnishing the equipment and the customer the container. This is part of our program to use nothing but closed collection equipment.

On January 1st, 1961, sanitation men started a 40-hour week. New equipment and methods permit the same force to give equal or better service on a 40-hour week than was formerly possible by working from 45 to 48 hours per week.

. . . than was possible with the open trailer and an eight-man crew—and at a savings of $28.16 per day.

WILLIAM W. FARRIS
Commissioner of Public Works
Memphis, Tenn.

Interstate Refuse Disposal

Philadelphia will use an area in its neighboring state of New Jersey for a sanitary landfill site. Street Commissioner David M. Smallwood has negotiated a contract with Russell W. Ward Enterprises, Inc., Palmyra, N. J. for a 125-acre site which is located in an isolated area along the Delaware River. This will be fully equipped for efficient operation including new access roads, modern equipment and watchmen. It will be used primarily for the disposal of non-combustible materials.

The landfill will reclaim this low-lying area on the Delaware for future industrial and commercial development, making it a valuable asset to the Delaware Valley area and at the same time it will permit the city to dispose of some of its non-combustible refuse. The cost will be $120,000 per year.

HARLEY-DAVIDSON SOLOS

thread their way through traffic

They thread their way through snarled traffic . . . through streets teeming with humanity . . . through congestion that would stop another vehicle in its tracks. That's why many a citizen has found a Harley-Davidson Solo a quick response to an emergency. It got there when seconds meant saving life, limb or property.

Throughout the United States, Harley-Davidson Solos and Servi-Cars are setting distinguished police records for dependability. The speedy, highly maneuverable Police Solo has proven itself an ideal pursuit vehicle for apprehending traffic violators and criminals. And for general all-around police duty — checking meters, routing traffic, marking cars, business and residential patrols — the versatile Harley-Davidson Servi-Car is without question the finest vehicle for the job.

Smooth riding, easy handling, simple maintenance, economical operation — are just a few of the Solo and Servi-Car features. For more facts on the new 1961 line of police motorcycles, see your dealer now. Or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin, for new, colorful, detailed brochure.

HARLEY-DAVIDSON
Police Motorcycles

Redistricting Case Challenges Rural-Dominated Legislature

For the first time, urban areas across the nation have some hope that states may be compelled to redraw their legislative districts in accordance with present population figures. This possible breakthrough in rural-dominated legislative roadblocks may be brought about by Nashville, which, under the leadership of Mayor Ben West, has been joined by other Tennessee cities including Chattanooga, Knoxville and Memphis in bringing an appeal from a three-judge U. S. District Court to the Supreme Court. In this case, *Baker, et al. v. Carr, et al.*, appellants argue that present legislative districts give certain voters only one-tenth of the representation given to other voters in less populated areas of the state. Charles S. Rhyne, of Washington, D. C., former president of the American Bar Association, prepared the appeal for the Tennessee appellants.

The Tennessee constitution requires redistricting once every ten years. However, the State Legislature has not changed its districts since 1901. Many state constitutions have similar requirements which legislatures also generally ignore.

In 1946, the U. S. Supreme Court heard a somewhat similar case presented by residents of Cook County, Illinois, involving federal congressional districts. However, at that time the court ruled against them, ruling that the question was political, rather than judicial.

If the Supreme Court rules favorably on this case, it will undoubtedly set precedent for similar cases in other states across the nation and should go a long way toward ending the rural domination of the state legislatures. ◄◄

Council-Manager Cities Excel In Public Information

Six of the seven cities cited for their excellent public information programs by the American Municipal Association's Committee on Municipal Public Relations operate under the council-manager plan. The cities and their managers are: Cincinnati, Ohio (C. A. Harrell); Miami Beach, Fla. (Melvin L. Reese); Coral Gables, Fla. (L. W. Robinson, Jr.); Riverside, Calif. (H. K. Hunter); Richmond, Calif. (Edwin S. Howell); and Western Springs, Ill. (R. V. Brown). ◄◄

Air Pollution Control News

Radical Solutions

Dr. Fritz Zwicky, Professor of Astrophysics at the California Institute of Technology, has proposed some radical solutions to the air pollution problem—including legally limiting automotive travel, supplanting the present gasoline engine and bringing economic pressure to bear on scientific institutions to produce answers. Dr. Zwicky is known for his advocacy of the "morphological" approach to problems, which means canvassing all conceivable courses of action, no matter how improbable; discarding the infeasible, and then adopting what remains, no matter how outlandish.

Cincinnati Develops "Scentometer"

Two members of the Bureau of Air Pollution Control in Cincinnati have developed a "scentometer," a device which is said to permit inspectors to pinpoint the intensity of an odor by sniffing through controlled air inlets. Norman A. Huey and Louis C. Broering, the developers of the "scentometer," say that it can not only help locate the factory causing an odor but the part of the factory where the odor started.

Smog Contaminates Grapes

The University of California has reported that ozone in smog causes a disease called grape stipple, which is a serious problem to Southern California growers. The symptoms are dark, spot-like lesions on the upper surface of leaves, resulting in bronzing, yellowing and premature leaf fall.

Air-Pollution Light in Minnesota

A recent report by the Minnesota Department of Health and the United States Public Health Service revealed that about half of the state's communities with populations of 1,000 or more have some kind of air pollution. However, the Director of the Department of Health's Division of Environmental Sanitation, F. L. Woodward, said air pollution is not as big a problem anywhere in Minnesota as it is in some areas of the country. Two factors help the state: there is little heavy industry and rapidly moving pressure systems, which are characteristic of Minnesota's weather, help scatter and dilute the pollutants.

Election Promises

The 1961 session of the New York State Legislature may bring action on several important air-pollution control fronts, if political statements made during the fall election campaign bear fruit. State Senators and State Assemblymen have pledged legislation to require crankcase "blow-by" devices to be installed by the automobile manufacturers on all new passenger cars sold in New York State (the manufacturers are doing this voluntarily on 1961 cars sold in California, but are showing no signs of extending the practice to other states). Legislation also may be expected that will give municipalities of over 50,000 residents matching funds for air-pollution control activities, wherever such activities have been approved in advance by the New York State Board of Air Pollution Control. Legislation may require the Air Pollution Control Board to set ambient air standards for the state. A joint legislative committee probably will conduct hearings on the extent of the automotive exhaust problem and what can be done about it. The fact that these moves are made by legislators from both the Republican and Democratic parties gives hope for passage.

—Prepared by Kenneth Kowald

375
Mack

FIELD OUTLETS

give Mack service and parts leadership among apparatus manufacturers

If your department has ever reported apparatus out of service for mechanical reasons, how long did you have to wait for parts and service?

This question looms large in almost every department, for rare indeed is the department with an excess of first line fire-fighting equipment. So rare, in fact, that it is imperative that apparatus be kept in top-notch shape . . . that it be maintained and returned to service with the greatest dispatch. No department can afford equipment out of service for any length of time.

If you operate Mack apparatus you know that, among apparatus manufacturers, Mack offers the most complete, the most widespread chassis parts and service system in the nation.

You know, too, that a part which might normally take two or three weeks to arrive from the manufacturer can usually be found in the stock of any one of 375 Mack branches and distributors all over the nation.

Keep parts and service availability in mind next time you specify apparatus . . . make it one of the requirements . . . and you'll settle for nothing less than a Mack. With such complete coverage . . . and with the reputation Macks have earned in fire-fighting performance . . . it is no wonder Mack apparatus is widely regarded as the finest.

Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK

FIRST NAME FOR

FIRE APPARATUS

Complete line of pumpers–500 to 1250 GPM...Squad and hose wagons...Aerials 65′ to 146′...Combination ladder trucks

Most universally useful is a center-mounted International Danco rotary mower. Heavy-duty, 42-inch model (above) can be used to mow anything from fine turf to tall, heavy weeds. For full-time turf mowing, a 60-inch model is available.

Never mind bottles, cans, broken masonry and other debris—mow vacant lots and similar areas safely with a Cub Lo-Boy and Hammer Knife mower. Two models: side-mounted or Fast-Hitch rear mounted, both 48-inch cut.

Mow tall weeds and tangled grass, on the level, down into ditches, or up steep slopes with an International Cub Lo-Boy and side-mounted International cutter bar mower. Cutter bar is hydraulically controlled.

How to save hundreds of dollars

on your mowing budget!

Your savings begin when you buy. An International Cub® Lo-Boy® costs hundreds of dollars less than larger tractors which can do no more on many mowing jobs—and *not* as well in small areas and cramped quarters. You pay little if any more for a Cub than for specialized, walk-behind units that can be used for mowing only. In contrast, the Cub is self-transporting between jobs, and finds many other uses, such as sidewalk snow plowing, after the mowing season ends.

Savings mount up year after year, as the Cub delivers full-time service without excessive upkeep costs. The Cub is a man-sized, full-fledged tractor with characteristic IH stamina and smooth-running engine that delivers 13.4 maximum flywheel hp. As for operating costs, you measure fuel consumption by the quart instead of by the gallon.

See how you can save—IH dealers are always glad to demonstrate the Cub with rotary, reel, cutter bar or Hammer Knife mower—at any location, on any job you select. See for yourself how much *more* a Cub can do per dollar of cost!

INTERNATIONAL HARVESTER

City Manager Hill and Street Superintendent Mel Sheehan inspect one of the buses converted to ice-control work.

Converted Buses Attack Icy Streets

Two converted school buses enable Mankato, Minn., to speed salt distribution for ice control while providing safer working conditions for the operators. We purchased our first used bus, a 1948 International 21-passenger unit, for $250 in 1957. A street department mechanic cut a hole in the floor in the rear of the bus to fit the Tarco salt spreader and built a frame to hold it in place.

As a result of the comparison of salt spreading by truck and by bus, we purchased a second bus, a 1950 Chevrolet, in 1959 for $300. With these two units, we now spread 90% of all our salt. Not only does it go down faster, but the operators work inside the bus where they are in no danger of slipping off. When we were using trucks, the operators had to stop occasionally to get warm even though they were dressed for below-zero weather to a degree that the clothing hampered their movements. In the warm bus they now work without halting, handling the bags of salt with their bare hands.

As a public-relations measure, we painted the words "Mankato Ice Control" on the sides of the new units. The local newspaper cooperated with some good publicity. When streets become slippery, Mankatoans now look forward to the appearance of our converted school buses which, in their opinion, still carry a precious load.

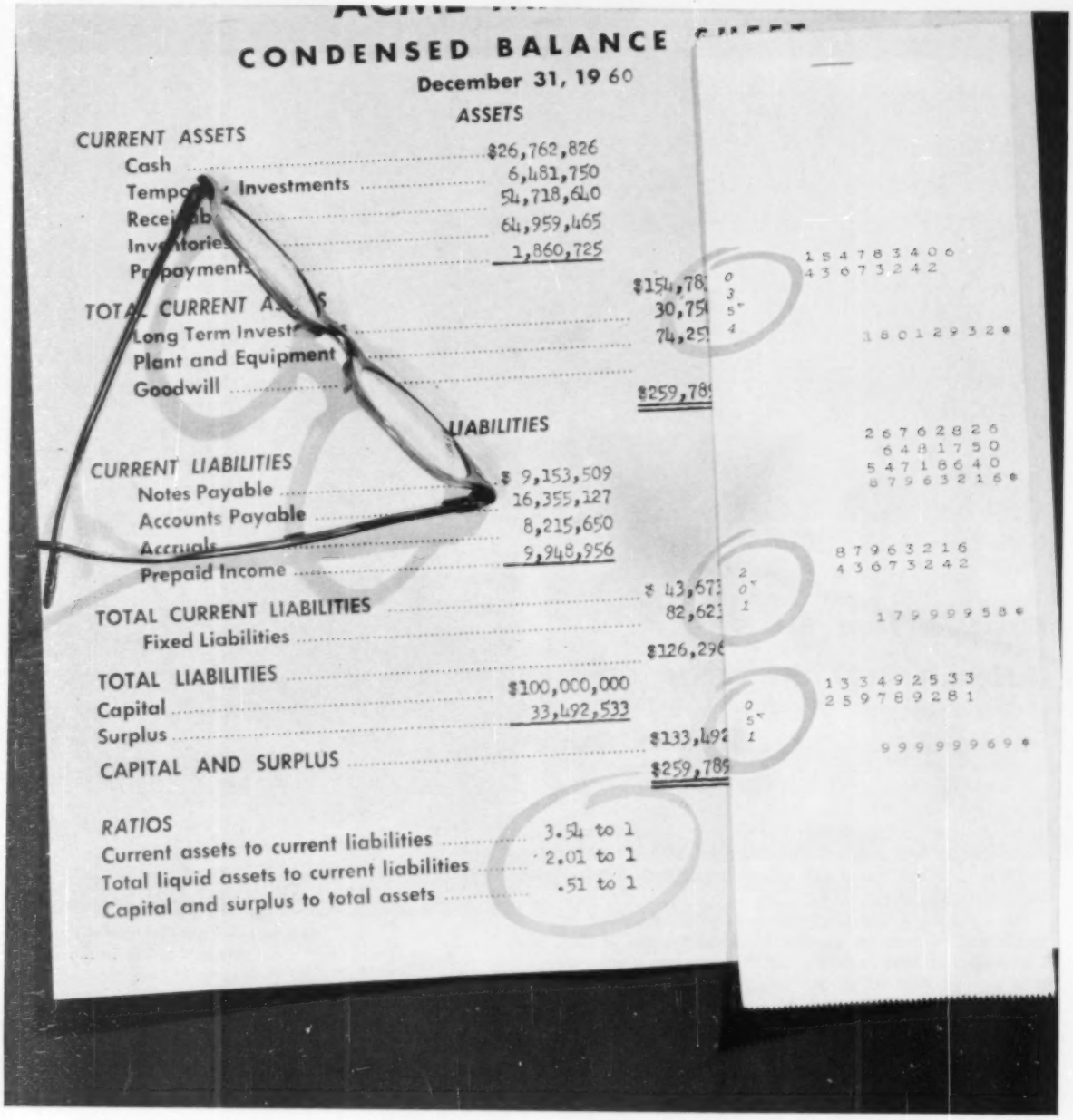
Salt sprays from the rear of the bus through a hole in the floor.

E. G. Hill
City Manager
Mankato, Minn.

Heavy Snow Changes Plowing Policy

As a result of a striking 17-inch snowfall just two weeks before Christmas Philadelphia is now and probably will in the future clear more streets than it has in the past. In late years the Street Department has cleared thoroughfares but has not touched the strictly residential streets. Realizing that the rental of a substantial number of contractor's trucks and plows would be necessary, Mayor Dilworth indicated that this money must be found because it is the city's duty to open all streets.

Warning that all Philadelphians have a responsibility to their city and themselves, he recalled that 4,000 vehicles were abandoned in the streets during and after the storm, making the plowing of many streets impossible until they were removed. For future storms he asked citizens to comply with city ordinances by cleaning their sidewalks and driveways, and also not to drive unless equipped with chains, shovels and sand. The mayor cited the example of cities like Minneapolis, which have snow throughout the winter, where every citizen knows his duty and does it, making possible an efficient job of snow plowing and removal and permitting the city to function normally, regardless of snow. ◄◄



Tape on a report!

Convincing way to substantiate facts with clearly printed proof

The exclusive control key on the Remington Rand "99" Calculator makes it possible. It eliminates confusing figures, makes operation simpler. Result: a printed tape with answers anyone can understand. Another outstanding development from Remington Rand . . . pioneer of the electronic computer and other leading machines for business. For complete information, call your nearest Remington Rand office or write: Room 021-AC Remington Rand, 315 Park Ave. South, N.Y. 10.

Remington Rand
DIVISION OF SPERRY RAND CORPORATION

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 55.

Overhead Maintenance

100 Here's an aerial arm that offers 270° upper arm and 120° lower arm travel, and will go 13 feet below street-level. HOLAN CORP., 4100 W. 150TH ST., CLEVELAND 35, OHIO refers to it as the unlimited action HD-50 elbow, says it has 70% more working range than other aerials. Literature available.

Skilled Engineering

101 . . . to meet municipal needs, such as traffic engineering, urban master planning, sewerage systems, streets, etc., are among the areas of specialization of CLARKESON ENGINEERING CO., INC., DEPT. 23, 285 COLUMBUS AVE., BOSTON, MASS. Comprehensive brochure gives full service story.

Water Coagulation

102 Eight-page *Bulletin* A-1 discusses the chemistry of coagulation applied to effective water treatment in municipal plants, practical approaches to problems and solutions. It is offered by NALCO CHEMICAL CO., ADVERTISING DEPT., 6216 W. 66TH PLACE, CHICAGO 38, ILL.

Key to Maximum Fire Fighting Efficiency

103 A fact-filled, illustrated folder, available from DANA CORP., TOLEDO 1, OHIO, explains how Model 183 Turbo-Matic Transmissions enable fire engines to operate with greater economy as well as with maximum efficiency from firehouse to fire.

Fast, Low-Cost Backfilling

104 . . . of ditches can be achieved with a Pow-R-Ditch Filler on the job depositing dirt back in the ditch in one pass, reducing clean-up time, and saving considerable labor. For literature on this new unit, write VERMEER MFG. CO., 1452 W. WASHINGTON, PELLA, IA.

Valuable Pipe Laying Book

105 This field practice guide suggests and recommends ideas and techniques that will help you to install properly American Concrete Cylinder Pipe (Fed. Spec. SS-P-381). It also includes helpful hints for laying other types of semi-rigid reinforced concrete pipes. It can be obtained from AMERICAN PIPE & CONSTRUCTION CO., 390 S. ATLANTIC BLVD., MONTEREY PARK, CALIF.

Revised Installation Guide for Asbestos-Cement Pipe

106 . . . shows the latest product design information and field installation recommendations. It also contains data covering site conditions and soil and includes considerable tabular data. For a copy of 124-page *Guide* TR-62A, write JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

Removes Excess Concrete and Asphalt

107 The Edco Concrete Plane is a gasoline-powered, heavy-duty unit which is to be used to remove high spots, high joints and excess joint sealer compounds on highways, erase traffic lines on streets and parking lots, and scarify and clean slabs prior to topping. For literature, write EQUIPMENT DEVELOPMENT CO., INC., 2700 GARFIELD AVE., SILVER SPRING, MD.

Help for Water Lines

108 Updated literature on several models of dependable air control valves, designed to keep long water lines open for safe, efficient, economical operation, can be obtained from MULTIPLEX MFG. CO., DEPT. E, BERWICK, PA.

Versatile Auto Crane Makes Spot Loading Easy

109 Illustrated literature gives facts and specifications on all models of Auto Crane, a versatile crane that power hoists, booms, rotates with one light portable remote control and precision spots its load as well as material handles. Write AUTO CRANE CO., 1214 S. NORWOOD, TULSA 12, OKLA.

Street Name Signs at Lowest Cost

110 3M CO., REFLECTIVE PRODUCTS DIV., DEPT. RBK-11, ST. PAUL 6, MINN., announces a special limited-time savings offer on street-name sign materials of "Scotchlite" Reflective Sheetings and the "Economist" Vacuum Applicator, which makes and maintains street name signs.

Water Filter Sands and Gravel

111 When you specify Northern sand and gravel you get clean filtering media that have been carefully graded and with the chemical and physical properties needed to assure proper filtering in the most meticulous water filtering plant. Write NORTHERN GRAVEL CO., P. O. BOX 307, MUSCATINE, IA.

Two Cents Per Foot for Trench Digging

112 Ditch Witch is a familiar name in the digging of trenches 4-16" wide and 6' deep. Costs are as low as 2 cents per foot. For details, write CHARLES MACHINE WORKS, INC., 603 BIRCH ST., PERRY, OKLA.

L. A. County Saves $70,000 a Year

113 It is doing it through use of National Remittance Control Machines which "simplify, expedite and establish better controls over processing fees, bails and fines in its municipal courts." For full story, write THE NATIONAL CASH REGISTER CO., DAYTON 9, OHIO.

The New M-3 Parking Meter

114 Takes 5 coins through a single slot. And it's a manual. Has stainless steel working parts that resist corrosion. Want to know more? Just write for descriptive catalog to DUAL PARKING METER CO., SUBSIDIARY OF ROCKWELL MFG. CO., PITTSBURGH 18, PA.

Snow-Plow Equipment Stays Snow, Rust-Free

115 SG-873 is a chemical formulation that aids as a rust preventative and keeps snow, ice, slush and dirt from sticking to plow blades and metal surfaces of other equipment and truck bodies. It can be sprayed on. But let SANFAX CORP., P. O. BOX 604, ATLANTA, GA. give you the details.

Stop Rust with Color

116 RUST-OLEUM CORP., 2985 OAKTON ST., EVANSTON, ILL., announces the availability of a new catalog on its New Color Horizons System and specialized Rust-Oleum systems, including color charts and applications. Free test sample of its 769 Damp-Proof Red Primer can also be obtained.

Low-Cost Refuse Burner

117 Numerous communities have discovered that this conical-shaped unit provides low-cost incineration per ton with batch loading or continuous feed and will burn all types of combustible waste. It's available in 10 sizes. For literature write, WILCO MACHINE WORKS, INC., BOX 3897AC-3, MEMPHIS 14, TENN.

Some Extra Features in Overhead Maintenance

118 Single-lever positioning control, 30 to 100-foot boom, hill leveling feature are really just a few of many advantages of using a Strato-Tower for overhead maintenance work. For others, write EQUIPMENT DIV., YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO.

The Proof Is in the Tape

119 For headache-free municipal accounting, Model 99's ten keys are sufficient to calculate tax, budget, inventory and all the various other municipal statistics. Not only does it calculate, but it also records for you. The "99" is a printing calculator that keeps a tape for your proof. For some real help on simple stock keeping, write ROOM 120AC, REMINGTON RAND, 315 PARK AVENUE SOUTH, NEW YORK 10, N. Y.

Boltless Flexible Joint Pipe

120 Usiflex is a boltless, flexible joint pipe for water and sewer services, recently introduced by U. S. PIPE AND FOUNDRY CO., BIRMINGHAM 2, ALA., to cut costs and save installation time and labor on underwater jobs. An illustrated technical brochure gives full story.

Free Analysis

121 . . . of your parking meter collection and service problems and information on a complete meter program for cities, towns and villages can be obtained from BROADWAY MAINTENANCE CORP., PARKING METER DIV., 22-09 BRIDGE PLAZA N., LONG ISLAND CITY 1, N. Y.

Emergency Lights

122 Catalog literature from CARPENTER MFG. CO., 964 BRADLEY ST., SOMERVILLE 45, MASS., lists the full complement of "Portalites," emergency lights that cover 5 times greater area than "sports-type" lights and 150% to 400% at less cost.

Pipe Pullers and Pushers

123 . . . for simplifying installation or renewal of water and gas service lines under pavement are presented in an illustrated and current bulletin offered by THE TROJAN MFG. CO., 1112 RACE DRIVE, TROY, OHIO.

(See page 48 for more Bulletins)

Save on construction costs with the new '61 FORD TRUCKS

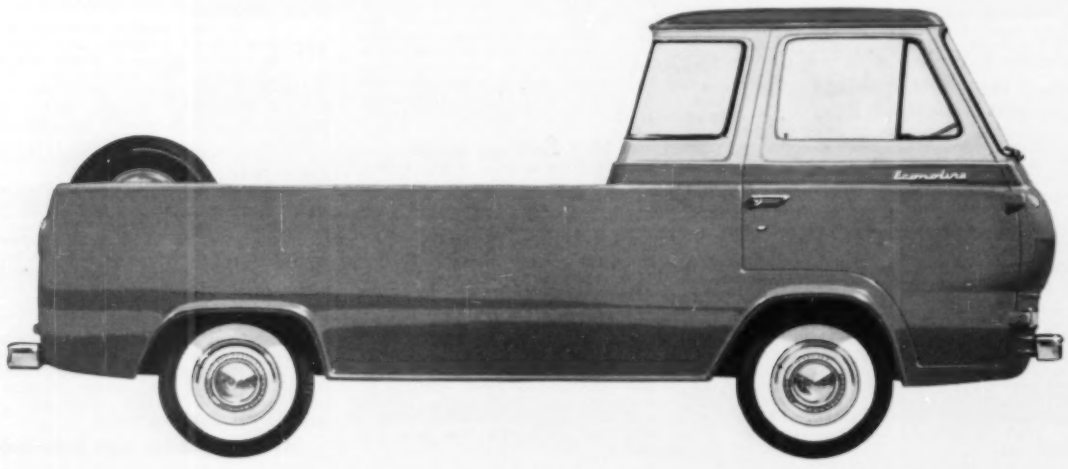
SAVE FROM $52 TO $221 ON PRICE* ALONE WITH FORD'S ECONOLINE PICKUP

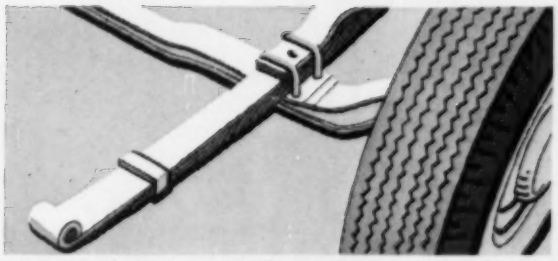
Profit-conscious contractors are finding it's good business to do business with the new Ford Econoline Pickup. It's America's lowest-priced* pickup—bar none! Priced from $52 to $221 below other cab-forward economy pickups. But that's just the beginning! You get lively performance and proven gas economy with the popular Falcon Six. This modern engine goes 4,000 miles between oil changes, and has an aluminized muffler which lasts up to three times as long as ordinary mufflers.

And you can save more because Ford's functional design has pared away 1,000 pounds of dead weight, yet you still get the payload capacity of standard ½-tonners. The big 7-foot box provides a whopping 73 cubic feet of loadspace . . . that's up to 23% more than conventional 6½-foot pickups. A full 49-inch tailgate opening means you can load items like standard sheets of 4′ by 8′ plywood. And the full-length *flat* floor permits bulky or heavy loads to be positioned easily by sliding them anywhere in the pickup box.

And you can save on maintenance expense, too. The large engine cover can be lifted quickly, exposing the entire engine for rapid service. Spark plugs, distributor, etc., are conveniently located to speed engine tune-ups. And many major repairs can be made without ever removing the engine. One-piece cab-and-body construction provides increased rigidity and eliminates a major source of rust. In addition, all main underbody structural members are heavily zinc-coated to resist rust and corrosion.

**Based on a comparison of latest available manufacturers' suggested retail delivered prices*





SAVE UP TO $150 ON FRONT TIRES! In certified tests of truck suspensions, Ford front tires lasted up to twice as long. In 50,000 miles savings can add up to $150 on a pickup . . . more on two-tonners. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's lowest-priced* medium-duty tilt-cab models now offer a big 262-cubic-inch Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved head and block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves and durable pyramid-type connecting rods. Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

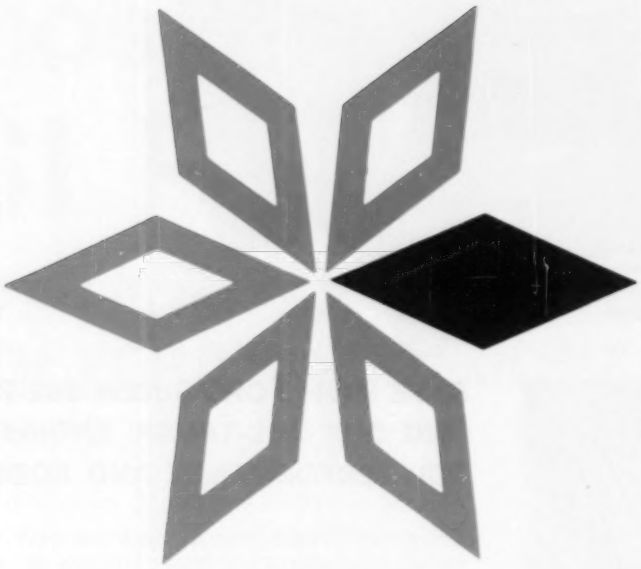
The popular Ford Tilt Cab Series outsells all other makes and for good reason! Their compact 82-inch BBC permits longer bodies within a given over-all length . . . for longer loads of lumber and building materials with excellent maneuverability. And set-back front axle design means more weight is carried on the front axle for greater payloads.

You also save with other new features like the stronger radiator with new lock-seam construction, and color-coded printed instrument panel electrical circuits that provide for greater reliability and simplified maintenance. In addition, Ford's parallel ladder-type frame, with standard 34-inch width, allows you to install new or transfer your present special construction bodies quicker and for less.

FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, Ford Motor Company



The New Symbol for Salt

. . . the most necessary element in the diets of both man and beast. Today salt is more significant to living than ever before. There are more than 80 varieties required by industry which has found some 14,000 uses.

Since 1886, Diamond Crystal Salt Company has been and is today, one of the country's leading producers of quality salt.

We introduce with pride our vigorous new symbol—the crystal formed of diamonds you see on this page. It represents total quality, backed by a progressive organization.

This symbol—though it is new—represents Diamond Crystal's 75 years of continuous service in supplying all industries with a quality product.

This new "symbol for salt" is your assurance of the purest product and finest service available anywhere.

A symbol for safety . . .

DIAMOND CRYSTAL SALT and SERVICE

New Rock Salt Storage Depots offer fast service for snow and ice removal salt.

Strategically located, these depots can help you maintain maximum safety precautions. These new rock salt depots can supply all your salt requirements in the shortest possible time. Here are the locations:

Buffalo, New York	Green Bay, Wisconsin
Charleston, West Virginia	Holland, Michigan
Chicago, Illinois	Louisville, Kentucky
Cincinnati, Ohio	Marietta, Ohio
Cleveland, Ohio	Milwaukee, Wisconsin
Detroit, Michigan	Port Huron, Michigan
East Liverpool, Ohio	St. Clair, Michigan

Learn exactly what these new storage depots can mean to you. Call or write the nearest Diamond Crystal sales office.

Diamond Crystal Salt Company

ST. CLAIR, MICHIGAN

PLANTS: AKRON, OHIO; JEFFERSON ISLAND, LA.; ST. CLAIR, MICH.
SALES OFFICES: AKRON • ATLANTA • BOSTON • CHARLOTTE • CHICAGO
DETROIT • LOUISVILLE • MINNEAPOLIS • NEW ORLEANS • NEW YORK

CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 55.

Pull-Type Spreader for Ice, Snow Control

124 This compact unit spreads all types of material with a spreading pattern from 3 to 32 feet. It can be used on sidewalks, ramps, parking lots and playgrounds as well as on streets. New *Bulletin* A-453 gives full facts; write BAUGHMAN MFG. CO., INC., JERSEYVILLE, ILL.

Graph Sheet Catalog

125 A new 92-page illustrated booklet lists graph sheets and their special uses. It is offered by KEUFFEL & ESSER CO., THIRD AND ADAMS STS., HOBOKEN, N. J. and includes an introductory guide to the selection of grid patterns as well as graph sheets for plotting business statistics, surveying and mapping, sketching and drawing.

Dependable Engines for Municipal Power Needs

126 Diesel, dual fuel, spark ignited gas engines, from 73 to 6933 hp, for stationary or portable electric service, flood or water pumping systems, sewage plant power—all are detailed in literature offered by ENTERPRISE ENGINE & MACHINERY CO., 18TH & FLORIDA STS., SAN FRANCISCO 10, CALIF.

High-Speed Mower

127 A new, clean-cutting side-mounted mower can be used for mowing highway shoulders and right-of-way, as well as for maintaining park areas. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL. reports that the No. 110 has 40% fewer moving parts than any other side-mounted unit.

Plastic Pipe for Water Service Lines

128 Descriptive folder from CRESCENT PLASTICS, INC., DEPT. C-O, 955 DIAMOND AVE., EVANSVILLE 7, IND., reports this pipe approved for potable water use, 50-75% less to install than metal pipe, and highly resistant to corrosion.

How to Simplify Pipe and Conduit Bending

129 *Bulletin* No. E-301 gives complete instructions, charts, and data for using the new Greenlee No. 1807 pipe bending degree indicator, which simplifies and speeds bending operations and eliminates costly spoilage by automatically measuring degree of bend as it is being made. Write GREENLEE TOOL CO., ROCKFORD, ILL.

Offers New Backhoe Line

130 A newly-designed line of backhoes has been introduced by WINDSOR PIPPIN CORP., WINDSOR, VT., and includes Models 260-H and 360-H, respectively designated for use with light or medium tractors and medium or heavy tractors. Literature gives full facts.

Incinerator Selector

131 This pocket-size device eliminates complicated computation, enables you to tell at a glance the type and size Morse Boulger incinerator unit required for a specific job. A request on your professional stationery addressed to MORSE BOULGER, 80 FIFTH AVE., DEPT. 21, NEW YORK 11, N. Y., will bring you one of these timesavers.

Highway Safety Equipment

132 New literature from SELECTO-FLASH, INC., 287 McKINLEY AVE., EAST ORANGE, N. J., features several items in the company's safety equipment line—utility light, utility barricade, flasher light, two-way flasher light, dome light and emergency vehicle lights.

Protective Coatings

133 The solution to a wide variety of corrosion and deterioration problems is presented in the new 8-page *Bulletin* No. T-97-61 on Bitumastic cold-applied protective coatings, available from KOPPERS CO., INC., TAR PRODUCTS DIV., PITTSBURGH 19, PA. Specification data, typical installations, recommendations for use are included.

Front-End Loader Attachment

134 . . . with 1¼ cubic yard capacity, digs 12 5/6 inches wide, has 8½ foot dumping height, 40° bucket roll back at ground level, 50° at dumping height, and 9,000-pounds breakout force. It's for the Kwik-Mix Hi-Lifter. For details, write KWIK-MIX CO., PORT WASHINGTON, WIS.

Water Storage Tanks

135 Ground level tanks, standpipes, elevated water tanks — water storage tanks of all types and all sizes, shop fabricated and field erected have been the concern of NOOTER CORP., 1407 S. THIRD ST., ST. LOUIS 4, MO. for over half a century. Write for details.

New Enamels for Highway Sign Painting

136 These enamels combine in one coat rust inhibition, durability and color retention. NATIONAL LEAD CO., 111 BROADWAY, NEW YORK 6, N. Y. will supply literature giving full facts.

(See page 50 for more Bulletins)

Get the FACTS and...

You'll Get "FLEXIBLE" Sewer Cleaning Equipment

If it's for cleaning sewers, "Flexible" makes it, from the smallest hand set to the heaviest power equipment. "Flexible" Sales Engineers spend 100% of their time working with Sewer Superintendents, analyzing their problems, and then training their crews after delivery.

A complete line of work-proven equipment, backed by the sound counsel of experienced "Flexible" Sales Engineers, gives your city maximum results for its sewer cleaning investment.

Get all the facts, without obligation. Write today!

RODDING MACHINES

SeweRodeR: Sectional rods, Positive Dog-and-Chain Drive, Safety Clutch, 4,000-lb. thrust, 3,000 ft. per day.

MonoRodeR: Continuous straight rod in lengths to 1,200 ft., Infinitely Variable Positive Drive Speed. Footage Counter and rotation Tachometer.

CoilRoderR: Coil rod cleaner for house laterals and sewers not over 6" diameter.

Instant Reverse Power Drive: For small jobs and limited budgets.

BUCKET MACHINES

Truck-Loder: Loads right into truck, ends dumping sewage on street, eliminates shoveling and cleanup. Sets up from street level using Surface-Hung Manhole Rollers. Safety Belt Booster Clutch, Footage Meter, Instant Dual Speed Transmission.

FLEXIBLE INC.

415 SO. ZANGS BLVD., DALLAS, TEXAS
3786 DURANGO AVE., LOS ANGELES 34, CALIF.
1005 SPENCERVILLE ROAD, LIMA, OHIO

Gamma ray equipment used to measure sub-surface densities

Scientific readings by the millions... recorded in the National Road Test

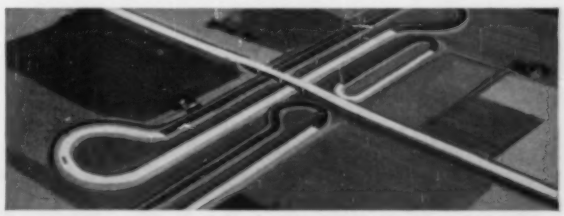
Sponsored by the American Association of State Highway Officials (AASHO), this 27-million-dollar test will provide "statistically unassailable" facts on modern pavement design.

On November 30th traffic ended on the 5 concrete and asphalt test loops near Ottawa, Illinois. 17 million miles of travel were marked up by the fleet of loaded trucks.

The entire National Road Test project is the most scientific experiment ever carried out on highway pavements. Modern statistical techniques, the newest in instrumentation, recording and automatic data processing equipment assure the total reliability and impartiality of findings.

Vital data have been pouring in, useful new facts on pavement performance are evident. The final result—a storehouse of engineering information needed by every engineer, official and legislator to plan and build the most practical, efficient road system possible.

For Interstate highways—and all roads and streets—the National Road Test will prove the most significant test of pavement types of all time.



836 test sections—repeating nearly 200 different pavement combinations make up the loops. Over 1,100,000 load applications have been recorded.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Aluminum Glass Covers for Sewage Treament Plants

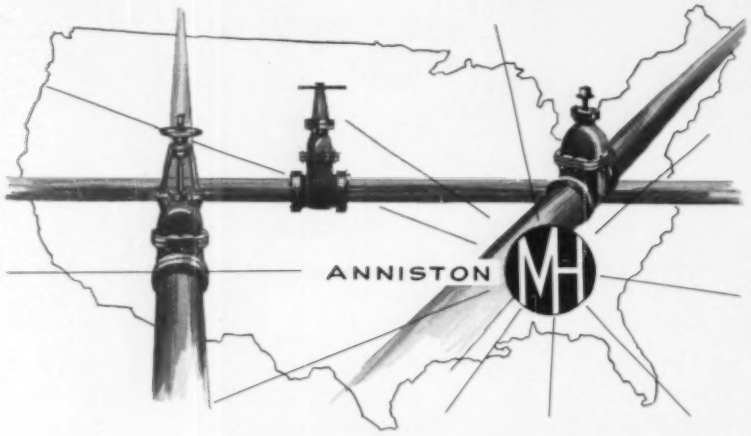
137 A new set of Engineer's Service Sheets (AC-161) gives details, recommendations and specifications for these glass covers, which increase efficiency of sludge drying beds and are recommended for trickling filters and settling tanks. Write LORD & BURNHAM, IRVINGTON, N. Y.

Doubles Scarifier Point Life

138 A new, two-point, reversible scarifier tip for road graders, known as "Twin Tip," permits the tip to be easily reversed on the scarifier shank when the initial point becomes worn. ALLIED STEEL & TRACTOR PRODUCTS, INC., 7835 BROADWAY, CLEVELAND 5, OHIO, can give you descriptive literature and full details.

Best Bid Rather Than Lowest Bid

139 *Form* 33956-D038 explains to governmental buyers of construction equipment why "best bid" is not synonymous with "lowest bid" and shows how a simple record system can serve as a guidepost to selecting the most economical machine. Write ADVERTISING DIV., CATERPILLAR TRACTOR CO., PEORIA, ILL.



a better Mouse Trap

The original use of iron body, bronze mounted valves in America came about through the discovery of steam power and the resulting industrial expansion about 1850 and later. In fact, the valves of those times were called "steam specialties."

Then in 1920, one of the old line valve companies was liquidated and much of the equipment for manufacturing iron body, bronze mounted valves and fittings was sold to a group of men in Anniston, Alabama.

That was the beginning of M & H! The first M & H valves were made in 1926, but difficulties were encountered and by 1932 annual sales volume was only $95,000. During that year of business depression, the Company was reorganized, refinanced, its products redesigned, its foundry and plant subsequently mechanized – and M & H started to grow!

It is the old story of "build a better mouse trap and the world beats a path to your door" – except in this case it was a better valve and hydrant. Today, 28 years later, M & H dollar volume of sales amounts to many millions annually.

Such growth in sales volume is no accident. Hard-boiled engineers and utility management buy valves where they get most for their dollars.

(No. 9 of a Series)

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA
SUBSIDIARY OF WALWORTH

The Model 480 Backhoe

140 . . . is a ½-yard struck capacity unit said to offer the highest flotation of any crawler backhoe. Its 3-pump hydraulic system enables the operator to work both boom and bucket while swinging. For details, write HYDRAULIC MACHINERY CO., 1400 NATIONAL AVE., WAUKESHA, WIS.

Chip Quickly, Chip Safely

141 Literature reports this brush chipper to be the fastest made, one that will require less down time, and one safe to operate. It accepts brush and limbs up to 6 inches in diameter. For copy, or demonstration, write ASPLUNDH CHIPPER CO., HAMILTON ST., CHALFONT, PA.

This Plug Valve Shuts Tight

142 . . . opens easily, needs no lubrication and is a logical choice for water works and sewage disposal plant lines. It's available in sizes ½-inch through 20 inches. Current literature gives full information; write DEZURIK CORP., SARTELL, MINN.

Portable Concrete Tester

143 This heavy-duty unit is the latest addition to a complete line of portable concrete testing equipment available from FORNEY'S INC., TESTER DIV., P. O. BOX 310, NEW CASTLE, PA. It has a self-contained power unit and brings laboratory performance to the job site.

Dry Chemical Feeders

144 If accurate, reliable continuous weigh feeding of dry chemicals is desirable in your water filtration or sewage treatment plant, the current Syntron catalog on diminishing batch weigh feeders will be of interest. Write SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA.

Facts on Tree Protection

145 . . . special dutch elm disease and mosquito control data, and free catalogs on Rotomist sprayers for tree care, leaf windrowing and fly and mosquito control can be obtained from JOHN BEAN, DIV. OF FOOD MACHINERY & CHEMICAL CORP., LANSING, MICH.

Street Maintenance Equipment

146 Have you seen the latest literature from HUBER WARCO CO., MARION, OHIO? It will bring you up to date on a dependable line of motor graders, 3-wheel and tandem rollers and maintainers.

Asphalt or Concrete Curber

147 DOTMAR INDUSTRIES, INC., 502 HANSELMAN BLDG., KALAMAZOO, MICH., reports that its new asphalt or concrete curbing paver controls compaction and requires no forms. Descriptive literature gives full facts.

Holds Hot or Cold Liquids

148 A rugged, galvanized steel water can lined with polyethylene and insulated with urethane foam maintains the temperature of hot and cold liquids. It comes in 2, 3, 5 and 10-gallon sizes. For literature, write H. P. GOTT MFG. CO., P. O. BOX 702, WINFIELD, KANS.

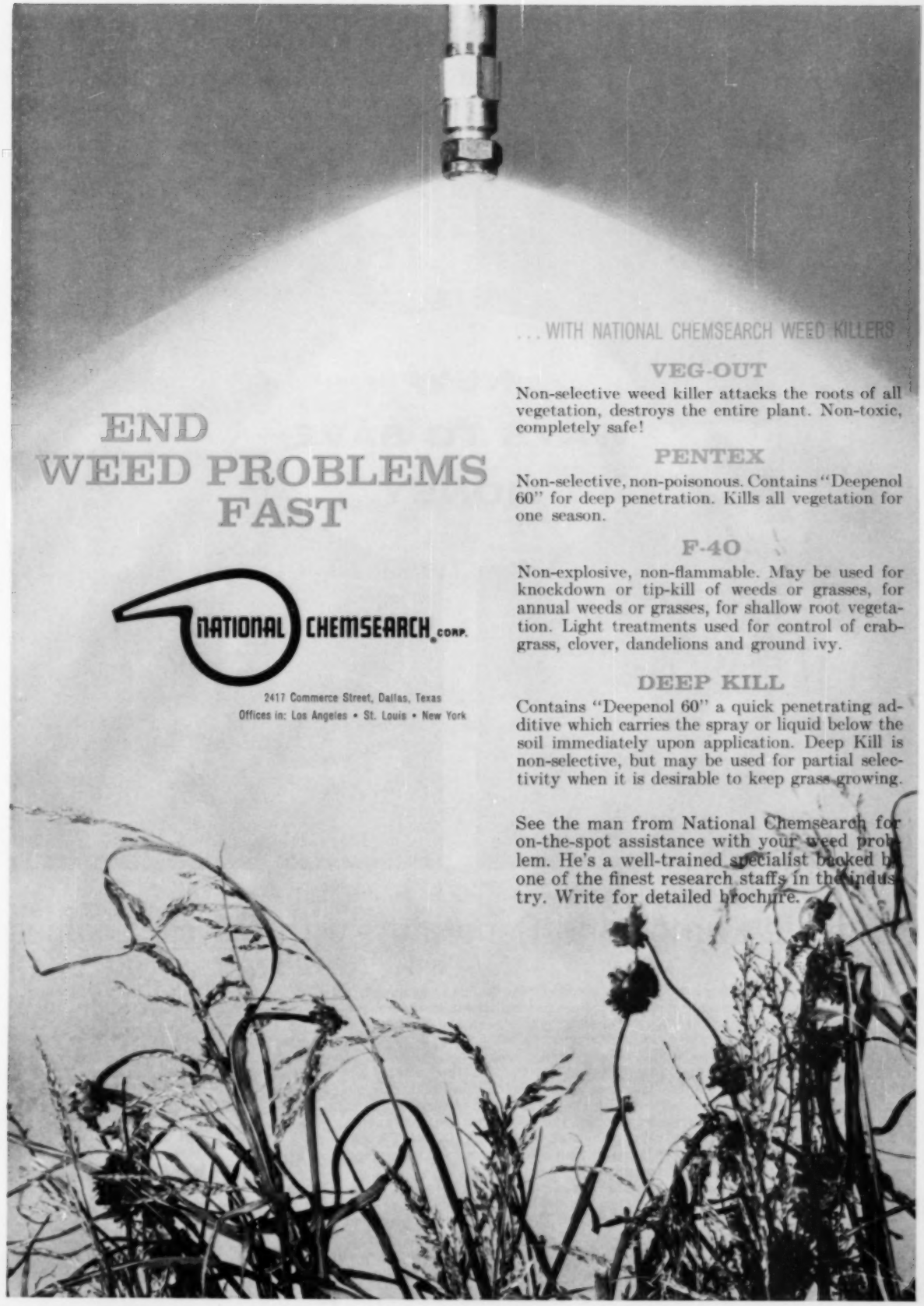
Signs and Markers

149 LAKE SHORE MARKERS INC., 654 W. 19TH ST., ERIE, PA., specialists in integrally cast double face signs and cast aluminum signs which require little or no maintenance, announce the availability of catalog literature descriptive of its product line.

Municipally-Sized Tractors, Loaders

150 . . . that can stretch your equipment dollars and speed up everyday municipal services are matters that J. I. CASE CO., DEPT. A1561, RACINE, WIS., can tell you about. Ask for specifications on the Model 530 Loader and Model 430 Loader.

(See page 53 for more Bulletins)



. . . WITH NATIONAL CHEMSEARCH WEED KILLERS

END WEED PROBLEMS FAST

NATIONAL CHEMSEARCH CORP.

2417 Commerce Street, Dallas, Texas
Offices in: Los Angeles • St. Louis • New York

VEG-OUT

Non-selective weed killer attacks the roots of all vegetation, destroys the entire plant. Non-toxic, completely safe!

PENTEX

Non-selective, non-poisonous. Contains "Deepenol 60" for deep penetration. Kills all vegetation for one season.

F-40

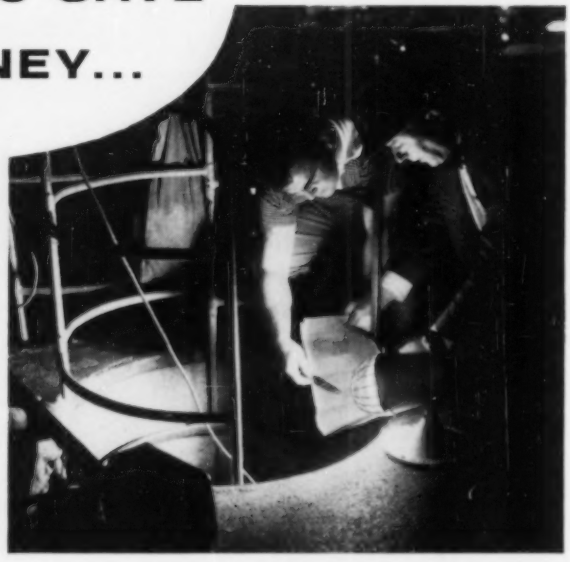
Non-explosive, non-flammable. May be used for knockdown or tip-kill of weeds or grasses, for annual weeds or grasses, for shallow root vegetation. Light treatments used for control of crabgrass, clover, dandelions and ground ivy.

DEEP KILL

Contains "Deepenol 60" a quick penetrating additive which carries the spray or liquid below the soil immediately upon application. Deep Kill is non-selective, but may be used for partial selectivity when it is desirable to keep grass growing.

See the man from National Chemsearch for on-the-spot assistance with your weed problem. He's a well-trained specialist backed by one of the finest research staffs in the industry. Write for detailed brochure.

NEW WAYS TO SAVE MONEY...



Homelite Pumps and Generators with **4-Cycle** Engines

A brand new line of economy-priced, 4-cycle engine-driven pumps and generators has just been added to Homelite's roster of construction equipment. Now, from one sales and service source, you can get the exact carryable pumps and generators your jobs require . . . low-cost, 4-cycle engine powered equipment . . . or finest-quality carryable pumps and generators powered by Homelite 2-cycle engines.

Homelite's new, self-priming pumps are available in 1½", 2", and 3" centrifugal and 3" diaphragm models. They feature new, extra-long-life CERASEAL ceramic seals, Briggs & Stratton engines with special, long-life valves and variable speed control; 28′ suction lift and big pumping capacities. Homelite's new generators come in 1500, 3000 and 5000 watts sizes with quality features such as TOOLSAVER voltage regulation; Wisconsin & Clinton engines with long-life Stellite exhaust valves; and simple, trouble-free generator construction.

All Homelite 4-cycle pumps and generators are available with either gasoline or L. P. gas operated engines.

Ask for a demonstration of these new, compact, lightweight and easily carried units now.

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE

CARRYABLE PUMPS • GENERATORS
BLOWERS • CHAIN SAWS

Franchises available in some areas, write for details.

HOMELITE • A DIVISION OF TEXTRON INC., 102 RIVERDALE AVE., PORT CHESTER, N.Y.

IN CANADA — Terry Machinery Co., Ltd.

Your City Can Improve Services and Reduce Costs

...by taking advantage of the improved municipal equipment offered below.

Write to address given or circle corresponding number on free post card on page 55.

Prestressed Noncylinder Concrete Pipe

151 Designed for high pressure applications, this pipe offers maximum strength without expensive steel cylinders. Flexible leak-proof joints and elimination of metal to metal contact between pipe lengths prevents electrolysis or corrosive action. For brochure, write CEN-VI-RO PIPE CORP., BOX 1416, SHAFTER, CALIF.

Plastic Gaskets for Sewer Pipe

152 Illustrated catalog sheets describe Ram-Nek plastic gaskets, their composition, unique method of packaging and application for sealing joints on all sizes of bell and spigot tongue and groove and concrete cylinder pipe. Write K. T. SNYDER CO., 4101 SAN JACINTO, HOUSTON 4, TEX.

Bulletin No. 7316

153 . . . is worth perusing if you're interested in improved methods of sewage treatment. It describes the D-O Aerator, a radically new design that provides exceptionally high oxygen absorption efficiency without clogging. Write DORR-OLIVER INC., STAMFORD, CONN.

Water Purification Equipment

154 ROBERTS FILTER MFG. CO., DARBY, PA. can provide information on a dependable line of water filtration plants and equipment, gravity filters and equipment, pressure filters, water softening and swimming pool equipment, as well as engineering cooperation and service.

Thaws Frozen Pipe

155 A small transformer makes it possible to thaw frozen pipes by using the ordinary domestic AC electric circuits—110 or 220 volts, single phase, 50 or 60 cycles, and it can be carried by one man. HOBART BROTHERS CO., TROY, OHIO will provide detailed literature on Porta-Thaw.

Heavy-Duty Air-Cooled Engines

156 *Bulletin* S-249 will bring you up to date on a full complement of heavy-duty air-cooled engines in the 3 to 56-hp class, available with electric starting and built to stand up under constant use. Write WISCONSIN MOTOR CORP., MILWAUKEE 46, WIS.

Copper Meter Yokes

157 Complete information and specifications on the full-line of Mueller copper meter yokes, available in a full range of sizes with O-ring angle meter stops, multipurpose end connections, compression couplings and test valves optional, can be obtained from MUELLER CO., DECATUR, ILL.

A Water Meter to Meet Your Needs

158 *Bulletin* 58 discusses the American water meter in terms of construction features, design flexibility, measuring accuracy, interchangeability of parts and housing styles. For a copy, write BUFFALO METER CO. INC., DEPT. AC, 2917 MAIN ST., BUFFALO 14, N. Y.

Automated Engineering Drawing System

159 A booklet available from RECORDAK CORP., 415 MADISON AVE., NEW YORK 17, N. Y., gives details on a precision microfilming system and describes the new Recordak engineering drawing system that is both dependable and automated. Write RECORDAK CORP., 415 MADISON AVE., NEW YORK 17, N. Y.

An Expert Writes About Trees

160 In an illustrated, 15-page booklet, DAVEY TREE EXPERT CO., KENT, OHIO, discusses the importance of trees as long term capital investments, site landscaping and planning, and the personality of trees.

From Waste to Revenue Producer

161 Schenectady, N. Y. flash dries digested sludge produced at the city's treatment plant and sells it as a soil conditioner. For details on this operation and on the Raymond Flash Drying System, write COMBUSTION ENGINEERING, RAYMOND DIV., 427 W. RANDOLPH ST., CHICAGO 6, ILL.

Lawn and Garden Tractors

162 Current literature from SPEEDEX TRACTOR CO., RAVENNA, OHIO, will acquaint you with these rugged, well-balanced units, which when matched with "Unit-Designed" tools perform favorably such tasks as park and cemetery maintenance, municipal and highway mowing, construction and landscaping work.

Compact Traffic Line Marker

163 . . . with 120-gallon capacity, lays 1, 2, or 3 lines in 1 or 2 colors, is self-propelled, one-man operated and geared to mark city, county or state roads. It is said to cost ⅓ less than truck-mounted markers. Write M-B CORP., DEPT. AC, NEW HOLSTEIN, WIS.

3-Blade Mower

164 A new, self-propelled, 3-blade rotary mower with 32-inch cut is recommended for large-lawn applications. It handles heavy growth without choking or clumping. For full details, write GOODALL MFG. CORP., WARRENSBURG, MO.

Portable Electric Plants

165 If you're interested in learning about portable electric plants that are certified to deliver all the power promised, then you'll want to write to ONAN DIV., STUDEBAKER-PACKARD CORP., 2535 UNIVERSITY AVE., S. E., MINNEAPOLIS 14, MINN.

Metal Gratings

166 Trench covers which provide drainage and traction, are 75% open, yet safe, and are designed to meet the needs of municipal plants, are but one type of metal grating for municipal use presented in the current catalog of IRVING SUBWAY GRATING CO., 1830 27TH ST., LONG ISLAND CITY 1, N. Y.

Full-Circle Clamp Coupling

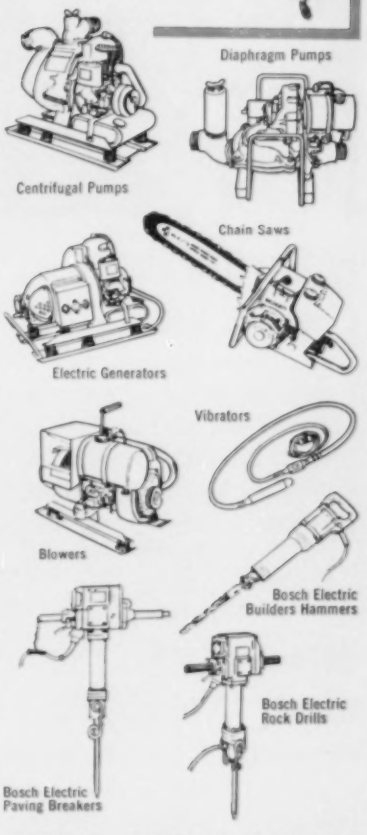
167 . . . fits all common sizes of cast iron, asbestos-cement, and steel pipe through 8-inch nominal, has all bolts on top, insures high mechanical strength, greater sealing power, lower initial cost and permanent repair. SMITH-BLAIR, INC., 535 RAILROAD AVE., SOUTH SAN FRANCISCO, CALIF. will provide details on the Type 216.

Custom-Engineered Engine-Generators

168 These Superior units are designed to achieve fuel economy for municipalities. They range from 190 to 2150 hp, or 150 to 1500 kw and can meet individual requirements for automatic, remote or unattended control. For details, write WHITE DIESEL ENGINE DIV., THE WHITE MOTOR CO., SPRINGFIELD, OHIO.

(See page 54 for more Bulletins)

HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

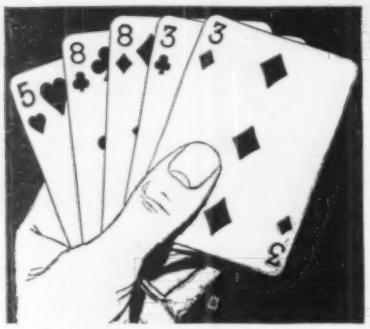
WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

HOMELITE

A DIVISION OF TEXTRON INC.
102 Riverdale Ave., Port Chester, New York

In Canada:
TERRY MACHINERY CO. LTD.

POKER? Play to win!



How would you play this hand?

You'll be the high hand before the draw about 3 times out of 5, but the odds are roughly 12 to 1 against helping on the draw. Odds are better than even somebody will beat you. Don't open. Don't call. Tough? Yes, but be patient...and win.

Here's a sure winner from FORD:

Ford pays half your fuel bills for a full six months (or 400 tractor hours) on the purchase of any new Ford or Fordson diesel tractor.

This offer, made possible by the amazing fuel-saving performance of these low-priced diesel tractors, expires March 31, 1961.

No "hidden" price increase... no tricks of any kind. See your Ford Tractor Dealer for all the money-saving details!

Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan

Ford TRACTORS EQUIPMENT

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Factory-Jointed Clay Pipe

169 Explanatory literature discusses the three types of factory-jointing, shows why this pipe reduces laying time, cuts installation costs, and reports it ideally suited to difficult installation conditions, such as high water tables. Write THE ROBINSON CLAY PRODUCT CO., AKRON 9, OHIO.

Water, Sewage Analyzing Equipment

170 There are many new and improved products for water and sewage analysis in *Catalog* 62a, a 132-page collection of products for water, industrial and public health laboratories, newly issued by HELLIGE, INC., 877 STEWART AVE., GARDEN CITY, N. Y.

Building Curb, Gutter, Street, Sidewalk?

171 Users of Rex steel forms for curb, curb and gutter, heavy slab work, sidewalks, etc. will find this *Guide* to be fact-filled, an easy reference to use, and very helpful. For a copy, write CHAIN BELT CO., 4640 W. GREENFIELD AVE., MILWAUKEE 1, WIS.

Aeration Equipment

172 *Bulletin* 135-A discusses a low-cost, nuisance-free small unit sewage treatment process equipment, designed for 20 to 5,000 people and for use in subdivisions and schools. Write FOOD MACHINERY AND CHEMICALS CORP., HYDRODYNAMICS DIV., CHICAGO PUMP, 622N DIVERSEY PKWY., CHICAGO 14, ILL.

Automatic Parking Meters

173 These meters can be adjusted on the site for time, rate and coin changes and can be utilized for both on- and off-street parking. MAGEE-HALE PARK-O-METER CO., 3909 WILLOW SPRINGS RD., OKLAHOMA CITY, OKLA. can show you how they can help achieve a profitable parking meter system.

Municipal Castings

174 There's practically every shape, style and size Buffalo casting to meet every municipal need and *Bulletin* M II illustrates and describes their application and features. Write BUFFALO PIPE & FOUNDRY CORP., DEPT. J, BOX 55—STATION B DE6764, BUFFALO 7, N. Y.

Works the Year 'Round

175 Here's a spreader that will enable you to speed summer construction jobs, dust control and soil stabilization operations. It will also handle winter ice control work more quickly, safely and efficiently. Ask SWENSON SPREADER, LINDENWOOD, ILL. about details.

Valves & Hydrants

176 These valves and hydrants will help effect better control of your water distribution system and will give reliable, efficient and positive fire protection. IOWA VALVE CO., OSKALOOSA, IA., will send literature on request.

Going to Purchase an Air Compressor?

177 Then you'll no doubt want to find out about the facts and features of the ruggedly constructed Smith 125, which delivers 125 cfm smoothly, economically and efficiently. Just ask GORDON SMITH & CO., INC., BOWLING GREEN, KY.

Chain for Sludge Collection Scrapers

178 MOLINE MALLEABLE IRON CO., ST. CHARLES, ILL., specialists in chain manufacture can tell you about long pitch pintle chain that's designed for extra service and long wear and is just right for sewage treatment plant service.

Designed for Sweeper Pick-Up Service

179 This grapple tilt hydraulic bucket with 42 inches of pavement drag is designed for mounting on a self-loading truck. It is said to give such completely clean pick-up that all hand-shoveling is eliminated. For specifications, write LODAL, INC., NORWAY, MICH.

Fabrics for Municipal Uniforms

180 When you specify Franklin worsteds, you specify top quality fabrics, uniform in shade, stock dyed and fast in color for your police and fire department uniforms. For additional information, write DAVID E. SINGER, SALES AGENT, FRANKLIN WORSTED CO., 40 E. 34TH ST., NEW YORK 16, N. Y.

The Key to Keeping Track of Keys

181 A 16-page booklet will tell you every thing you want to know about a key control system, available in 10 models and 33 capacities from 21 to 2240, and designed to meet the needs of municipal plants, warehouses, hospitals and public buildings. Write P. O. MOORE, INC., GLEN RIDDLE 5, PA.

Nontipping Picnic Tables

182 TAK-A-PART picnic tables are quick to assemble, dismantle in minutes, store flat. Slide-easy, skid-type feet protect turf from damage. Walk-thru design provides easy access. Welded steel tubing end frames support tables up to 10 feet in length. For catalog, write MIDWEST METAL STAMPING CO., KELLOGG 2, IA.

Weed Control Brochure

183 GEIGY AGRICULTURAL CHEMICALS, DIV. OF GEIGY CHEMICAL CORP., DEPT. A-2, SAW MILL RIVER RD., ARDSLEY 2, N. Y. has published a booklet containing complete directions, diagrams, applications and other useful data on weed control with safe, effective pre-emergence and post-emergence herbicides.

Outdoor Lighting Catalog

184 Reservations are now being accepted by PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J., for its new CIRCLElux Catalog, which describes components of an outdoor lighting package that provides low level lighting at realistic costs.

Tax Appraisals

185 THE J. M. CLEMINSHAW CO. specializes in the revaluation of municipalities and rural property for local tax equalization purposes. For brochure and client list, write to the company at 1601 BROOK RD., CLEVELAND 9, OHIO.

Sewage Gas Control Equipment

186 In *Catalog* No. S-4 you'll find the full line of Varec sewage gas control equipment, manufactured by THE VAPOR RECOVERY SYSTEMS CO., 2820 N. ALAMEDA ST., COMPTON, CALIF., completely described and illustrated along with helpful schematics and technical materials.

Safety Markings for Streets, Highways

187 Traffic experts and safety engineers can be brought up to date on a dependable product line of reflective markings for streets, highways, and road signs. They've only to write PRISMO SAFETY CORP., HUNTINGDON, PA., and request a full-line catalog.

(See page 62 for more Bulletins)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

NEW YORK 16, N. Y.

Bad Dreams Can Give Way to . . .

If you need information on any type of municipal service or equipment mentioned or advertised in this issue, these reply cards will get action in a hurry.

TO THE AMERICAN CITY's Catalog Supply Department:
Please send literature on items numbered as follows, starting on page 43

100	115	130	145	160	175	190	205	220	235
101	116	131	146	161	176	191	206	221	236
102	117	132	147	162	177	192	207	222	237
103	118	133	148	163	178	193	208	223	238
104	119	134	149	164	179	194	209	224	239
105	120	135	150	165	180	195	210	225	240
106	121	136	151	166	181	196	211	226	241
107	122	137	152	167	182	197	212	227	242
108	123	138	153	168	183	198	213	228	243
109	124	139	154	169	184	199	214	229	244
110	125	140	155	170	185	200	215	230	
111	126	141	156	171	186	201	216	231	
112	127	142	157	172	187	202	217	232	
113	128	143	158	173	188	203	218	233	
114	129	144	159	174	189	204	219	234	

I would also like to receive manufacturers' booklets on.....

.....

.....

.....

Name: (Please Print).....

Title:.....

Address:.....

..... 2-61

A Listing of Your Business Connection is Important

TO THE AMERICAN CITY's Catalog Supply Department:
Please send literature on items numbered as follows, starting on page 43

100	115	130	145	160	175	190	205	220	235
101	116	131	146	161	176	191	206	221	236
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103	118	133	148	163	178	193	208	223	238
104	119	134	149	164	179	194	209	224	239
105	120	135	150	165	180	195	210	225	240
106	121	136	151	166	181	196	211	226	241
107	122	137	152	167	182	197	212	227	242
108	123	138	153	168	183	198	213	228	243
109	124	139	154	169	184	199	214	229	244
110	125	140	155	170	185	200	215	230	
111	126	141	156	171	186	201	216	231	
112	127	142	157	172	187	202	217	232	
113	128	143	158	173	188	203	218	233	
114	129	144	159	174	189	204	219	234	

I would also like to receive manufacturers' booklets on.....
.....
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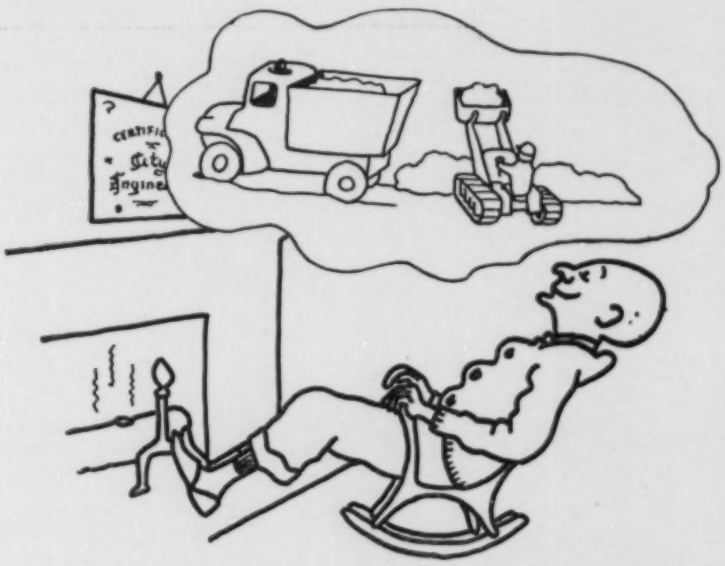
Name: (Please Print).....
Title:.....
Address:.....
..... 2-61

A Listing of Your Business Connection is Important

Peace of Mind



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THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
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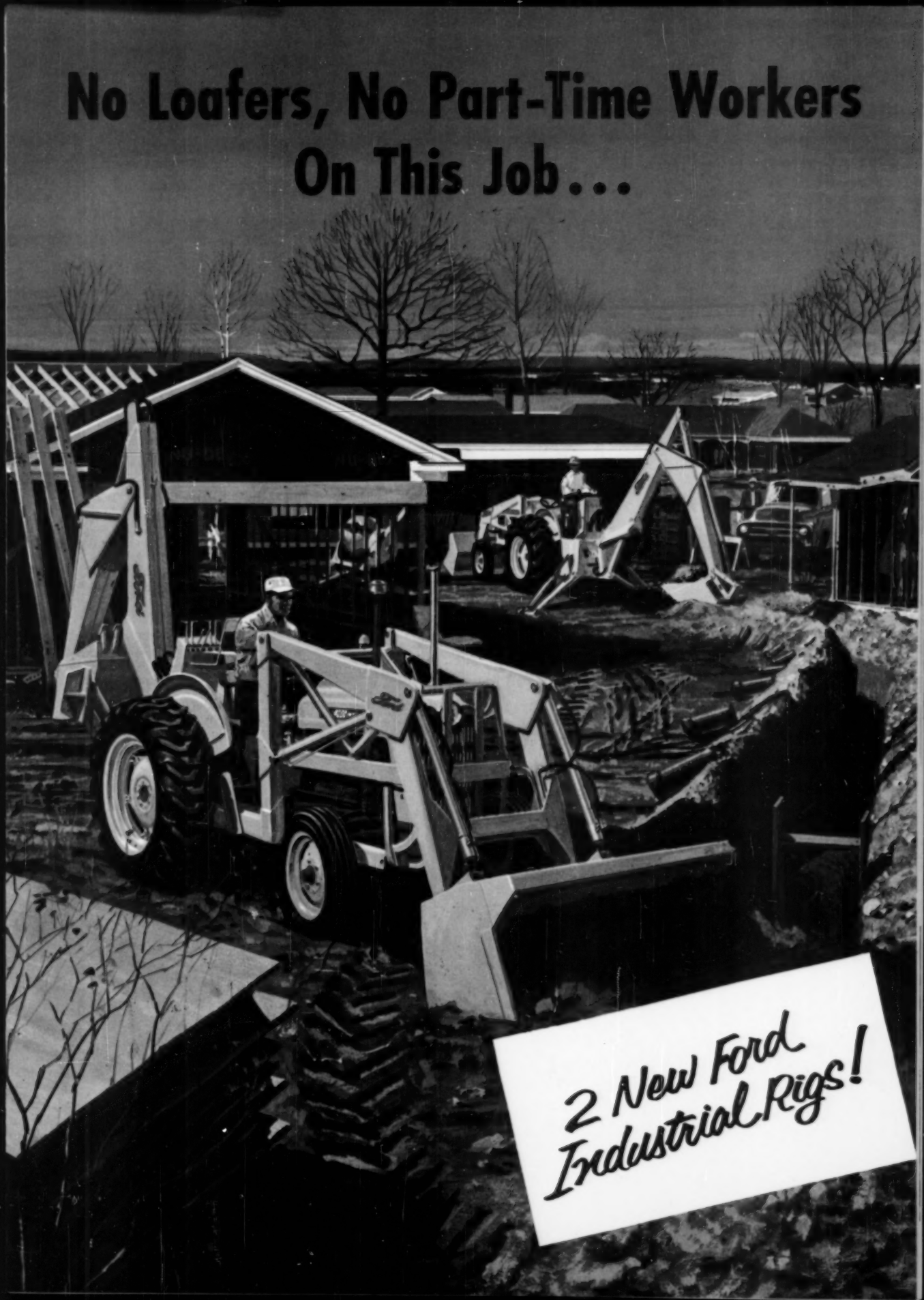
Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

No Loafers, No Part-Time Workers On This Job...



2 New Ford Industrial Rigs!

New FORD 2000 Industrial tractor has 48.4 engine horsepower (gasoline), heavy front end, power steering, foot throttle—easily handles this 10′ Ford backhoe and new Ford 720 Loader. Try this unit for low first cost, low fuel bills, fast maneuvering in tight spots.

New FORD 4000 Industrial tractor has all the high production features of the 2000 but with 62.5 horsepower plus added weight and strength. High powered and rugged, the 4000 makes tough jobs easy with this new Ford 720 Loader and a 12′ backhoe.

These Bright NEW Ford Rigs are ALL-DAY, ALL-JOB WORKERS

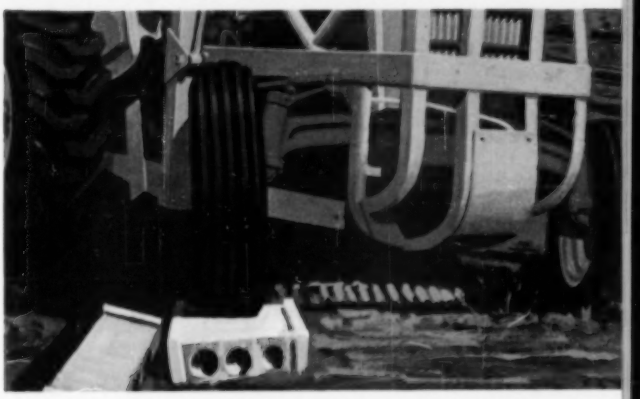
The paint is new but that's not all . . . here are a couple of lean and brawny middleweights with new productivity, versatility, dependability. These new Ford rigs don't sit around on their big fat tires half the day . . . they dig, load, backfill, grade—handle a dozen jobs from either end. A 2000 or 4000 is small enough to get in tight places, strong enough to do the job. They're *sized right* between light and heavy equipment . . . *priced right* down among the lowest of their kind . . . *built right* to do more good jobs for you . . .

NEW High-Lifting Half-Yarder—Half-yard struck capacity bucket, 2000 lb. lift, 4000 lbs. break-out capacity. High-speed, cool-operating hydraulics and Ford's fast tractors permit fast, sustained loading . . . responsive 4-position controls and a handy bucket level indicator provide accurate digging, grading, loading.

Far Reaching Backhoes—Pick the size you need—10′ or 12′ for either unit . . . each Ford backhoe attaches quickly, has big buckets, precise controls, wide stance stability and fast, strong hydraulics . . . the 10′ size digs 10′8″ deep, and reaches out 17′4″ from the axle . . . the 12′ size digs 12′5″ deep and reaches 19′ from the axle . . . Ford backhoes are unmatched for length of trench dug from one setting!

Ford Pays Half your diesel fuel bills—buy a diesel-engined Ford 2000 or 4000 and Ford pays half your fuel bills for the first six months or the first 400 hours—whichever occurs first. Fords are famous as fuel misers and now you can cut operating costs even more. Offer good to March 31, 1961 on any new Ford or Fordson diesel. See your Ford dealer for details.

Downshift on-the-go with Select-O-Speed to bull in, bring out a heaped payload . . .



One-piece rugged cast steel I-beam front axle moves heavy loads over curbs, across ruts.

High lift—long reach of loader dumps into the center of your standard truck.

FOR 101 INDUSTRIAL JOBS

FORD

COPYRIGHT 1960 FORD MOTOR COMPANY

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

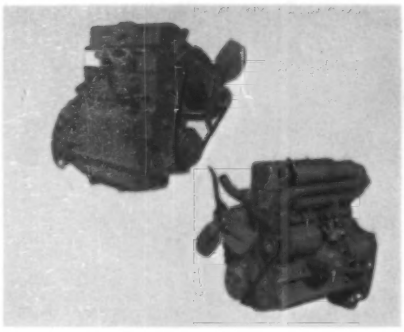
FIRST CLASS
PERMIT NO. 119
BIRMINGHAM,
MICHIGAN

Ford Motor Company
2500 E. MAPLE ROAD
BIRMINGHAM, MICHIGAN

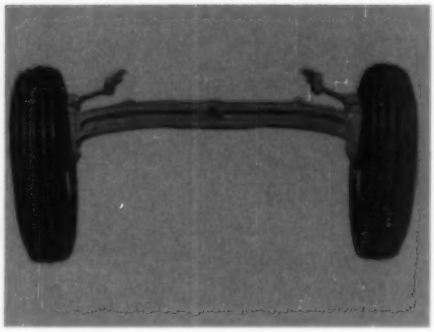
ATTN: Industrial Sales

FORD WORKS FULL-TIME FOR YOU

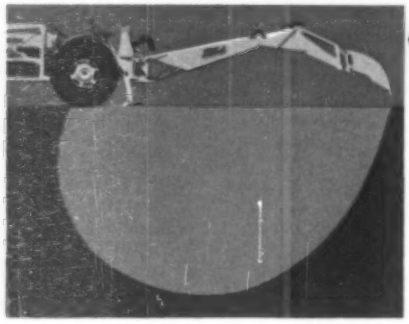
...and here's why:



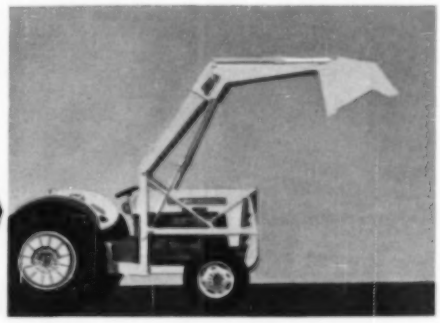
Dependable Power comes from Ford's proven gasoline, diesel or LP-gas "Red Tiger" engines.



Curb Jumper, Rut Rider—5000 lb. rated capacity front axle, larger, rugged spindles, heavy drag links, powerful power steering, big 7.50:16, 6 ply tires—this front end is built to soak up the pounding of heavy work.

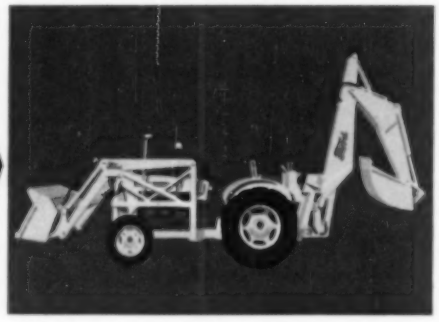


Slashes Labor Costs—Dig by machine, not by hand! All Ford backhoes undercut as far back as the tractor's rear axle to reduce hand digging; all have accurate controls for precision digging around existing lines, other obstacles.



Fast Truck Loader—12 second cycle, bucket position indicator, 45° dump angle, 14° roll-back, long reach, high dump heights, short over-all length—fast truck loading is this unit's specialty.

All Day Comfort—One step up swings you onto the cushioned seat . . . power steering kills ground shocks, handy foot accelerator speeds production.



Tailored to Your Jobs—Pick your transmission: 4 speed, reversing, 12 speed—over under, or Select-O-Speed . . . pick your fuel . . . pick your tires . . . choose from 7 loader buckets, 6 backhoe buckets, 5 stabilizer types . . . and choose from a long list of extra equipment for special jobs. These new Ford rigs *can* be your *all-day, all-job workers.*

Send me information on:

- ☐ Ford 2000 Industrial tractor
- ☐ Ford 4000 Industrial tractor
- ☐ Ford 720 Loader
- ☐ Ford 10′, 12′ backhoes
- ☐ Send name of nearest dealer

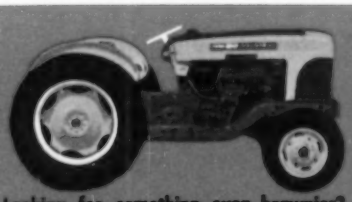
NAME_____

COMPANY_____

POSITION_____

STREET_____

CITY_____ STATE_____

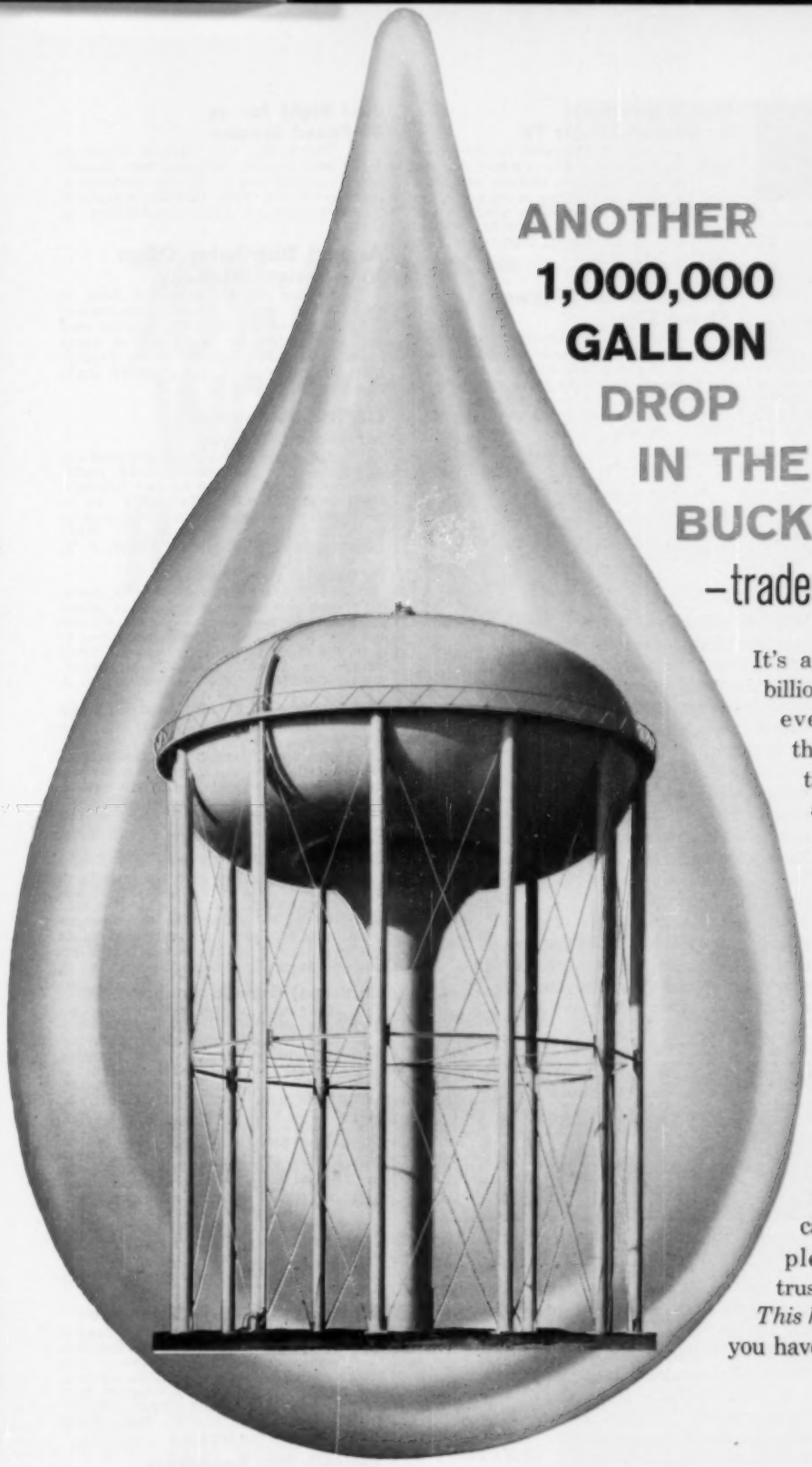


Looking for something even brawnier? Check Ford's big 4040 Industrial Tractor

SEE YOUR NEARBY

FORD

TRACTOR AND EQUIPMENT DEALER



ANOTHER 1,000,000 GALLON DROP IN THE BUCKET

–trademarked PDM
ELEVATED STEEL TANKS

It's a mighty big "bucket"—the billions of gallons of water stored every day in PDM tanks throughout the country. So big that the frequent addition of a million or more new gallons of capacity is—comparatively—but a waterdrop in the total. • And yet, to each of the thousands of American communities served by PDM Elevated Tanks, every gallon of the safe and dependable water storage enjoyed is a thoroughly essential part of daily living. • It follows that each PDM tank we build is engineered, fabricated and erected with complete responsibility to the trust it is destined to receive. *This has been so since 1897.* • Do you have our latest Catalog?

PITTSBURGH-DES MOINES STEEL COMPANY

Plants at PITTSBURGH, WARREN, BRISTOL, PA. • BALTIMORE • BIRMINGHAM • DES MOINES • PROVO, UTAH • CASPER, WYO. • SANTA CLARA, FRESNO, STOCKTON, CALIF.

Sales Offices: PITTSBURGH (25), Neville Island • WARREN, PA., P. O. Box 660 • BALTIMORE (26), P. O. Box 3459, Curtis Bay Station • BIRMINGHAM (8), P. O. Box 8641, Ensley Station • DES MOINES (8), 1015 Tuttle Street • PROVO, UTAH, P. O. Box 310 • SANTA CLARA, CALIF., P. O. Box 329 • EL MONTE, CALIF., P. O. Box 2012 • NEW YORK (17), 200 East 42nd Street • NEWARK (2), 744 Broad Street • CHICAGO (3), 679 First National Bank Bldg. • ATLANTA (5), 361 East Paces Ferry Rd., N. E. • DALLAS (1), Suite 1703, Southland Center DENVER (2), 323 Railway Exchange Bldg. • SEATTLE (1), 500 Wall Street

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

When Dependable Power Performance Is Important

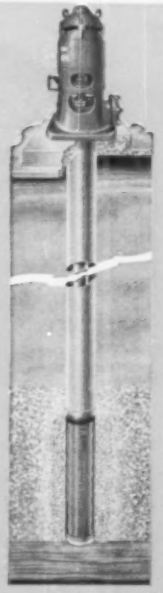
188 Low and high speed generators in ratings from 10 to 10,000 kw, designed and engineered to meet specific and meticulous power requirements of municipalities, are thoroughly described in literature currently available from IDEAL ELECTRIC & MFG. CO., 359 E. FIRST ST., MANSFIELD, OHIO.

Pipe Inspection by Closed-Circuit TV

189 . . . makes it possible for the viewer to see what the trouble is, spot where it is, and observe repairs in pipe as small as 4 inches in diameter. One city has saved as much as $197,500 with this method. Write NATIONAL POWER RODDING CORP., 1000 S. WESTERN AVE., CHICAGO 12, ILL.

Standards for Highway, Street Signs

190 Longspan, double-rigid street and highway standards that hold luminaires steady and light both sides of the roadway, thus increasing driver vision, are the subject of a current catalog, available from MILLERBERND MFG. CO., WINSTED 1, MINN.



Why take a chance? Inferior, inexpensive strainers can only mean costly, time consuming replacement. When you install a Cook Well Strainer you are guaranteed years of superior service attested by thousands of installations that are still producing water at their original G.P.M. The exclusive design of Cook Strainers permits the most direct and unobstructed water way from the water bearing formation into the well. The V-shaped slot allows for maximum development which is accomplished by the removal of silt, alluvium, clay and fine sand from around the outside of the strainer. This provides a natural filter of coarser and more uniform sand and gravel.

sustained performance
YEAR after YEAR with
a strainer by COOK

Investigate all the advantages of Cook Strainers. They are available in Red Brass, Silicone Bronze, Armco Iron, or Stainless Steel; in as many different slot sizes as required. Eight to twenty-four hours delivery often possible by telephoning Cincinnati HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway Avenue • Cincinnati 11, Ohio
WORLD'S LEADING NAME IN WELL STRAINERS

Just Right for an 80-Pound Breaker

191 That's the way catalog literature describes the easy-starting, smooth-running rotary "75" air compressor, manufactured by THE JAEGER MACHINE CO., 505 DUBLIN AVE., COLUMBUS 16, OHIO.

Asphalt Distributor Offers New Design, Efficiency

192 *Catalog* #RS1256 gives full facts on Model 424-56 pressure distributor, designed and tested by asphalt men and field tested for two years on every grade of asphalt available. Write STANDARD STEEL WORKS, INC., NORTH KANSAS CITY, MO.

Electric Photometer for Water Analysis

193 Adaptable for use in water analysis, the Klett Summerson electric photometer can be used for any determination in which color or turbidity can be developed in proportion to the substance to be determined. Write KLETT MFG. CO., 179 E. 87TH ST., NEW YORK, N. Y.

Accurate Water Meter

194 If you are interested in a meter that will accurately measure water use for long periods of time without excessive maintenance, then you'll want to scan the current Watch Dog catalog being offered by GAMON METER DIVISION, WORTHINGTON CORP., NEWARK, N. J.

Rid Hands of Grime and Grease

195 Permanently grimy hands will be a thing of the past at municipal workshops and plants when Go-Jo hand cleaner arrives on the scene, for this product not only thoroughly cleans but acts as an antiseptic and softener. GOJER, INC., BOX 991, AKRON 9, OHIO will give full facts.

Steel Pipe

196 The latest steel pipe brochure from STEEL PLATE FABRICATORS ASSOCIATION, 105 W. MADISON ST., CHICAGO 2, ILL., describes the inherent qualities of fabricated steel pipe and points out how they lend themselves to the requirements of water lines.

Universal Ground Anchor

197 Developer of this self-orienting device reports it performs satisfactorily in soils ranging from Arctic permafrost to desert sands, that it's easy to install and available for loads ranging from 1,000 to 3,000 pounds. Write BARTLETT MFG. CO., 3003 E. GRAND BLVD., DETROIT 2, MICH.

Push-Button Refuse Pick-Up System

198 This sanitary speedy, mechanized system of refuse handling and pick up has been tested under actual job performance for 4 years. It's designed to reduce manpower and increase efficiency. For full facts and test results, write MARION METAL PRODUCTS CO., MARION, OHIO.

All-Purpose Material Handler

199 It can backfill sewer trench, remove a tree, load and spread material, remove snow, install culverts—and a lot more—because it's versatile, efficient, has 180° boom swing. Literature from PETTIBONE MULLIKEN CORP., 4700 W. DIVISION ST., CHICAGO 51, ILL., says it replaces 4 to 7 machines.

Reliable Fire Apparatus

200 In the demanding field of fire fighting there is no margin for error—equipment which is steady-performing, dependable, is a must. MACK FIRE APPARATUS, ALLENTOWN, PA., can tell you about such a line of pumpers, squad and hose wagons, aerials and combination ladder trucks.

(See page 66 for more Bulletins)

70% MORE WORKING RANGE with

Holan's Unlimited* Action HD-50 Elbow

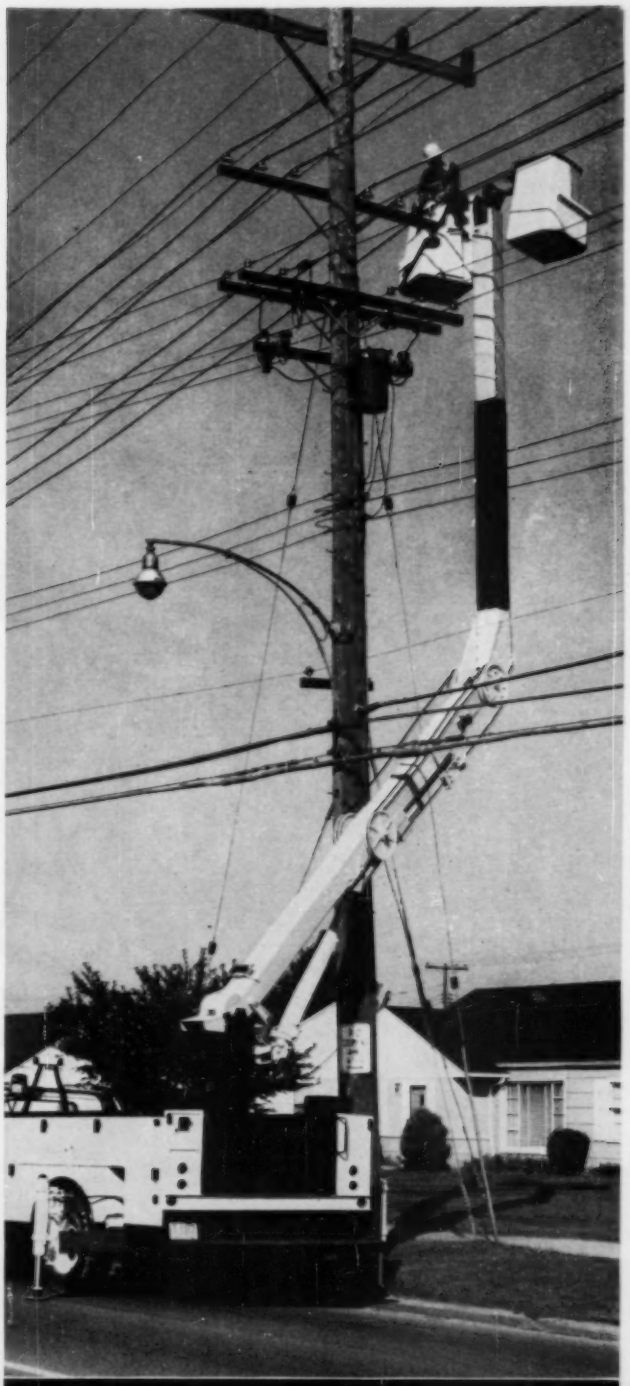
Holan's unlimited* action Elbow will go straight up . . . or straight out . . . or 13 feet below street level. It has 70% more working range than limited action aerial arms . . . and will put your linemen in a greater variety of working positions than any other aerial arm on the market today.

But it requires "beefed-up" chassis reinforcement and special supporting jacks to offset the tremendous loads. Features like these increase the original cost . . . but less truck maneuvering saves time and dollars in the long run . . . and more than justifies the additional cost of the full-action Holan Elbow.

Safety demands rigidity . . . precise control of the upper arm . . . and fiberglass buckets certified tested at 50,000 volts (A.C.). The upper arm of the Holan Elbow will withstand a one-minute, 200,000-volt (A.C.) dry bucket-to-ground test.

If you require less than full action, see our medium duty or light duty limited action Elbows and our new 65-foot model. And for the very latest in Holan aerial equipment, be sure to ask about the new Holan "Squirt Boom."

270° UPPER ARM AND 120° LOWER ARM TRAVEL



Parked at the curb, a limited action, two-man bucket aerial arm could not possibly get in this working position. An unlimited* action Elbow goes under the low-hanging communication cables, then up the property side of the pole without moving the truck.

Holan Corporation, 4100 West 150th Street, Cleveland 35, Ohio

Holan

Subsidiary of THE OHIO BRASS COMPANY

HOLAN

"Ah'm trainin' Oncle Rafe to swim under water... he wants to get a closer look at them boltless joints!"

U.S. cast iron PIPE FOR WATER, SEWERAGE AND

another "first" from U.S. Pipe

Again, U.S. Pipe takes the lead...

This time with the new USIFLEX® Boltless Flexible Joint Pipe, specifically designed to cut costs, save installation time and labor on costly underwater jobs.

Developed after years of research... and exhaustive tests... Usiflex pipe takes to water like a duck. Marvelously simple to install. No bolts, nuts, wrenches. Self-sealing gasket and lead lock your only accessories. And Usiflex locks bottle-tight with only moderate thrust. Once locked, it stays locked... cannot be dislodged when assembled or deflected.

Want the full story on the simplicity, dependability, ease of assembly and economy of Usiflex pipe? Call or write for illustrated technical brochure. Today!

U.S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A Wholly Integrated Producer from Mines and Blast Furnaces to Finished Pipe.

USIFLEX®
BOLTLESS FLEXIBLE JOINT* PIPE

*U.S. Patent No. 2,564,938

INDUSTRIAL SERVICE CAST IRON®

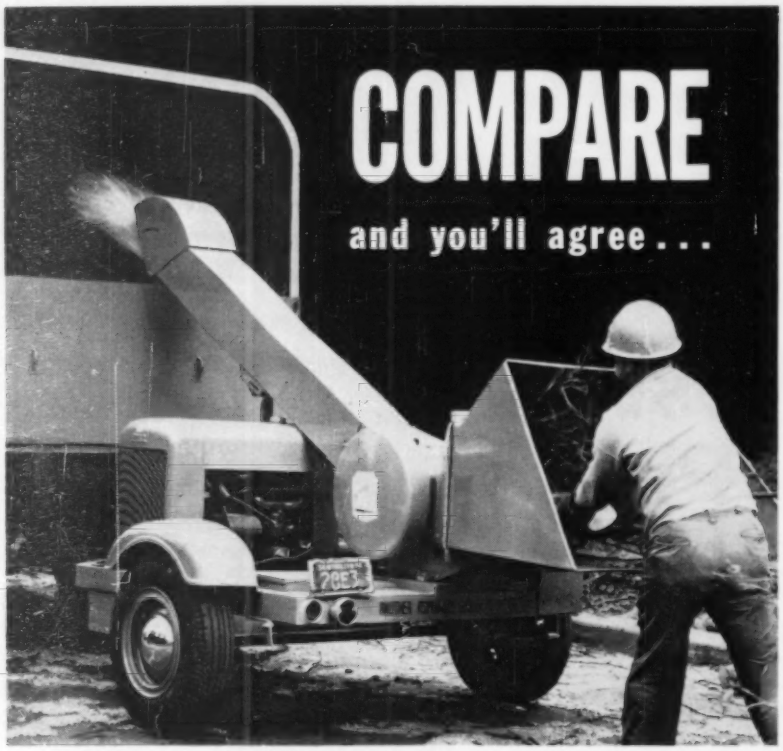
1 Insert the gasket in its seat in the socket. Forming gasket loop helps initial stage of seating. Release of loop allows gasket to spring into the gasket seat where it is securely held.

2 Apply special Usiflex lubricant to the ball and inside surface of seated gasket in socket. After lubrication, ball is ready to be pushed into socket.

3 Ball has been socketed. Retainer ring lugs have been lined up with recesses in bell and retainer ring is ready to be moved into the bell and rotated.

4 After insertion and rotation of retainer ring in bell, the lugs on retainer ring are in back of and in register with internal flange segments in bell. Lead lock is partially inserted into recess between the bell and retainer ring.

5 Lead lock completely inserted in recess is being caulked in place by hammer blows on a wide caulking iron.



The New 1961 Asplundh Chippers Are Best for Municipalities

Asplundh Chippers are rugged, absolutely safe, are engineered for continuous, trouble-free service. They chip faster than any other chipper in the world; are easily maintained, simple in design, require less labor and materials cost.

New 1961 features include:

- **new wedge locking bar assembly** for simpler, faster blade maintenance
- **replaceable floor plate,** eliminates need for housing disassembly
- **larger diameter cylinder journals** for a stronger chipping unit
- **removable cutter bar assembly** to facilitate service
- **optional blower unit** to preclude chute stoppage when chipping large volume of dense or wet foliage

DECIDE WITH THE FACTS . . . write for complete information . . . ask for names of users near you. Best of all, ask for a DEMONSTRATION WITHOUT OBLIGATION. What could be more conclusive?

Write today—

ASPLUNDH CHIPPER COMPANY

Hamilton St., Chalfont, Pa.
TUrner 7-2500

Proven in service by the world's largest tree company

CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 55.

3 New Backfill Blades

201 . . . announced for the Hopto hydraulic excavator Series 500, 200 and 110 Snap-Mount, fasten onto the Hopto excavating bucket and speed up the change from excavating to backfill operation. For literature, write BADGER DIV., WARNER & SWASEY CO., WINONA, MINN.

Allis-Chalmers' New Crawler

202 This tough, compact crawler tractor is in the 6,000-pound class and comes gasoline-powered (H-3) or diesel-powered (HD-3). It and its full line of matched companion equipment are described in literature. Write ALLIS-CHALMERS MFG. CO., UTILITY CRAWLERS, MILWAUKEE 1, WIS.

They Catch Litter

203 These metal baskets are designed for spotting at bus stops, alleyways, in public parks and along streets. They're durable, low cost, weatherproof. For details, write DESIGNERS METAL DIV. OF SOUTHERN ELECTRIC, INC., 8701 S. GREENWOOD AVE., CHICAGO 19, ILL.

One-Way Snow Plows

204 An illustrated catalog will give you all the facts on these one-way plows, which work with equal efficiency whether operating at low speed and curb-to-curb windrowing or at high speed on open thoroughfares. Write FRINK SNOPLOWS, INC., CLAYTON, 1000 ISLANDS, N. Y.

A Really Big Backhoe

205 That's the Shawnee 1500, which is said to have more reach, more digging depth and more loading height than any other tractor-mounted backhoe on the market. A descriptive bulletin will give you the facts. Write PARSONS COMPANY, SHAWNEE DEPT., NEWTON, IA.

Unclogs Sewer Lines Fast

206 Just pour ND-25 into a manhole and it will begin immediately to remove and loosen sewer-cloggng debris and roots. And because it is colored red, you can trace its effectiveness throughout the line. For brochure, write NATIONAL CHEMSEARCH, 2417 COMMERCE ST., DALLAS, TEX.

Elevated Water Storage Tanks

207 Dependable gravity pressure water storage for general service and fire protection is a subject about which CHICAGO BRIDGE & IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL. knows a great deal. So if there's something you'd like to know, why not ask CB&I?

Street Fittings

208 . . . presents a complete line of service and roadway boxes, manhole rings and covers and adjustable two and three-ring valve boxes that will fully protect water and gas distribution valves. For copy, write OPELIKA FOUNDRY CO., P. O. BOX 326, OPELIKA, ALA.

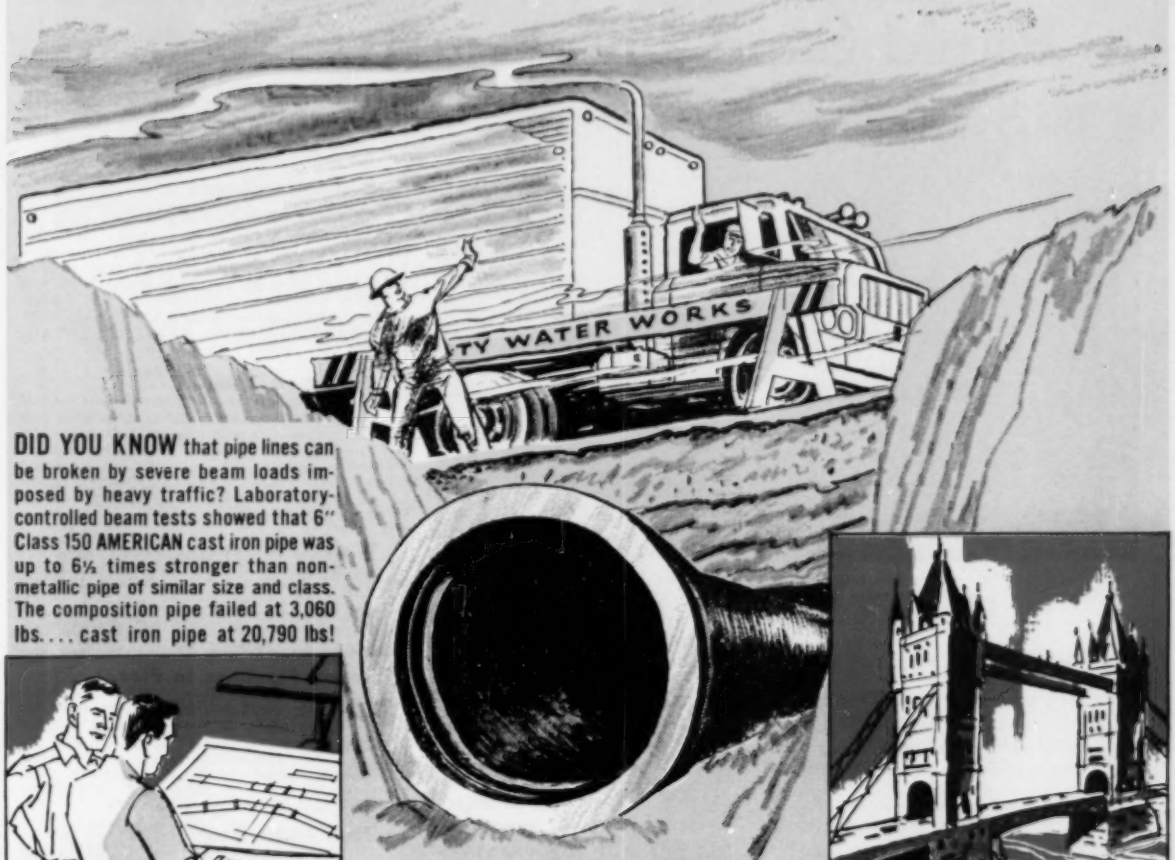
Time Recording Equipment

209 Municipalities which have successfully eliminated time leaks and increased efficiency in their city departments through use of the Lathem time-recorders, stamps and watchmen clocks will be interested to know that LATHEM TIME RECORDER CO., 92 THIRD ST., N. W., ATLANTA, GA., has announced a new time recorder.

(See page 68 for more Bulletins)

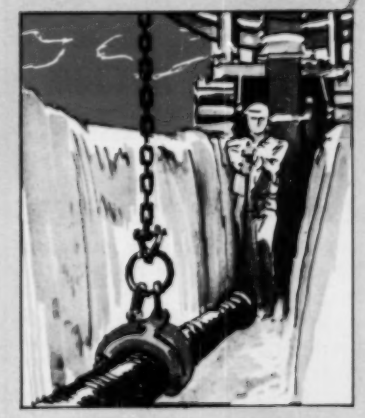
PIPE FACTS

A recent survey of hundreds of water works superintendents indicated that up to 6 to 1 preferred cast iron pipe over non-metallic substitutes.



DID YOU KNOW that pipe lines can be broken by severe beam loads imposed by heavy traffic? Laboratory-controlled beam tests showed that 6" Class 150 **AMERICAN** cast iron pipe was up to 6½ times stronger than non-metallic pipe of similar size and class. The composition pipe failed at 3,060 lbs.... cast iron pipe at 20,790 lbs!

DID YOU KNOW that **AMERICAN** cast iron pipe can be designed to withstand varying internal pressures and external loadings? Rigid A.S.A. specifications, approved by the American Water Works Association and other groups, assure water works engineers of the superior design of cast iron pipe.



DID YOU KNOW that cast iron pipe installed over 228 years ago in London, England, is still in service? And that cast iron mains installed in 1823, continue to serve New York City today? No substitute pipe can equal these authenticated records.

DID YOU KNOW that **AMERICAN** Fastite pipe can be assembled faster than a trencher can dig? Its exclusive, double-sealing single gasket, push-type joint is the reason why. Insert gasket ...lubricate plain end...push pipe together...and it's permanent!

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM **ALABAMA**

Use Northern Gravel for Rapid Sand Filter

This is the beautiful water filtration plant of the city of Springfield, Illinois . . . another user of the Northern Gravel Company's filter sand and gravel.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 47 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** **Phone: AMherst 3-2711**

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

TV Camera Spots Pipe Breaks

210 Closed-circuit TV enables you to pinpoint trouble spots in vital pipelines, eliminating guess work, permits observation of repairs, and makes possible a permanent record of work done. INSPECTOLINE, INC., 9501 EUCLID AVE., CLEVELAND 6, OHIO will provide details.

Maintenance and Sanitation Chemicals

211 The maintenance and sanitation chemicals and products illustrated and described in this new 68-page catalog virtually run the gamut—all will be of interest to municipalities. For a copy, write ZEP MFG. CORP., 1310 SEABOARD INDUSTRIAL BLVD., N. W., ATLANTA 1, GA.

Drill, Set, Tamp—

212 According to *Catalog* 400 that's about all you have to do to install—in less than 15 minutes—stress spun Hy-Lite lighting standards. For full details on design and advantages of these prestressed concrete poles, write AMERICAN CONCRETE CORP., 5092 N. KIMBERLY AVE., CHICAGO 30, ILL.

Water Purification Problems?

213 Ferri-Floc can help you achieve purer process water by improving coagulation, softening, removal of iron and manganese. For full details, write TENNESSEE CORP., 612-629 GRANT BLDG., ATLANTA 3, GA.

Reline Pipelines In Place

214 When you reline pipelines the Spunline way, you rehabilitate them so that flow increases, pumping costs drop; meantime traffic moves without interruption. Pipelines down to 4 inches can be relined this way. Let PIPE LININGS, INC., 2414 E. 223RD ST., WILMINGTON, CALIF., tell the full story.

Trim Audit Costs 60%

215 With one Sensimatic F-1500 typing accounting machine, Green County offices in Xenia, Ohio have achieved this new accounting efficiency. BURROUGHS CORP., DETROIT 32, MICH., can provide details and help you achieve accounting efficiency through office automation equipment.

Union Metal Announces

216 THE UNION METAL MFG. CO., CANTON 5, OHIO, manufacturer of Monotube engineered poles for street lighting applications, announces that these standards are now available in cold-rolled strain-hardening, aluminum alloys. For details, write the company.

Traffic Signal Controls

217 Since 1927 when AUTOMATIC SIGNAL DIVISION, EASTERN INDUSTRIES, INC., NORWALK, CONN., developed the first traffic-actuated signal, it has developed many new Electro-Matic traffic signal controls. Details on the current line are given in descriptive literature.

Tackles Street and Road Work

218 This 4-in-1 grader handles utility loading, maintains shoulders in one pass, scarifies tough, heavyweight materials, lifts and rolls loads. It's the Model D, and its attachments add to its versatility. Write ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIV., MILWAUKEE 1, WIS.

(See page 71 for more Bulletins)

PHOTO COURTESY OF CITY OF TOLEDO, OHIO

HI-RANGER Makes One Man A WHOLE TEAM

A Hi-Ranger aerial tower, equipped with an all-hydraulic chain saw and pruning tool, enables one man in a few minutes to do exactly the same job it normally takes a whole crew half a day to accomplish by any other method.

Large and small cities across the nation find Hi-Ranger an indispensible tool for overhead park and street maintenance, for utility and line work, for street and traffic light installation or maintenance, and for dozens of other municipal work problems above ground level.

When speed, safety and operating flexibility are important, specify Hi-Ranger. Reach ranges from 32 feet, up. CALL, WIRE OR WRITE NOW.

HI-RANGER Mobile Aerial Towers, Inc.
1730 N. Harrison St. • Ft. Wayne, Ind.

GRAVELY CLEAN-CUT 70

BIG MOW-BILITY DOES YOUR JOB BETTER!

in HALF the time at HALF the cost

Free your people for other important work; save man-hours. The Clean-Cut 70 ROTARY GANG MOWER gives you extra power, extra speed, extra maneuverability.

Ride at 5 MPH and cut a swath 70 inches wide! Change your cutting width *while you mow!* Trim, mow, mulch . . . all in one money-saving operation.

Unexcelled maneuverability with unique rear-wheel drive and steering. Mow slopes as steep as 30%!

There's a 35 and a 24 inch rider mower and a self-propelled 20 inch unit, too. See what Clean-Cuts can do for your grounds.

Ask your Gravely dealer for a FREE demonstration, or write for complete FREE LITERATURE to:

GRAVELY CLEAN-CUT MOWERS
P.O. BOX 736B DUNBAR, WEST VIRGINIA

TC TENNESSEE CORPORATION

PURER PROCESS WATER

WITH FERRI-FLOC

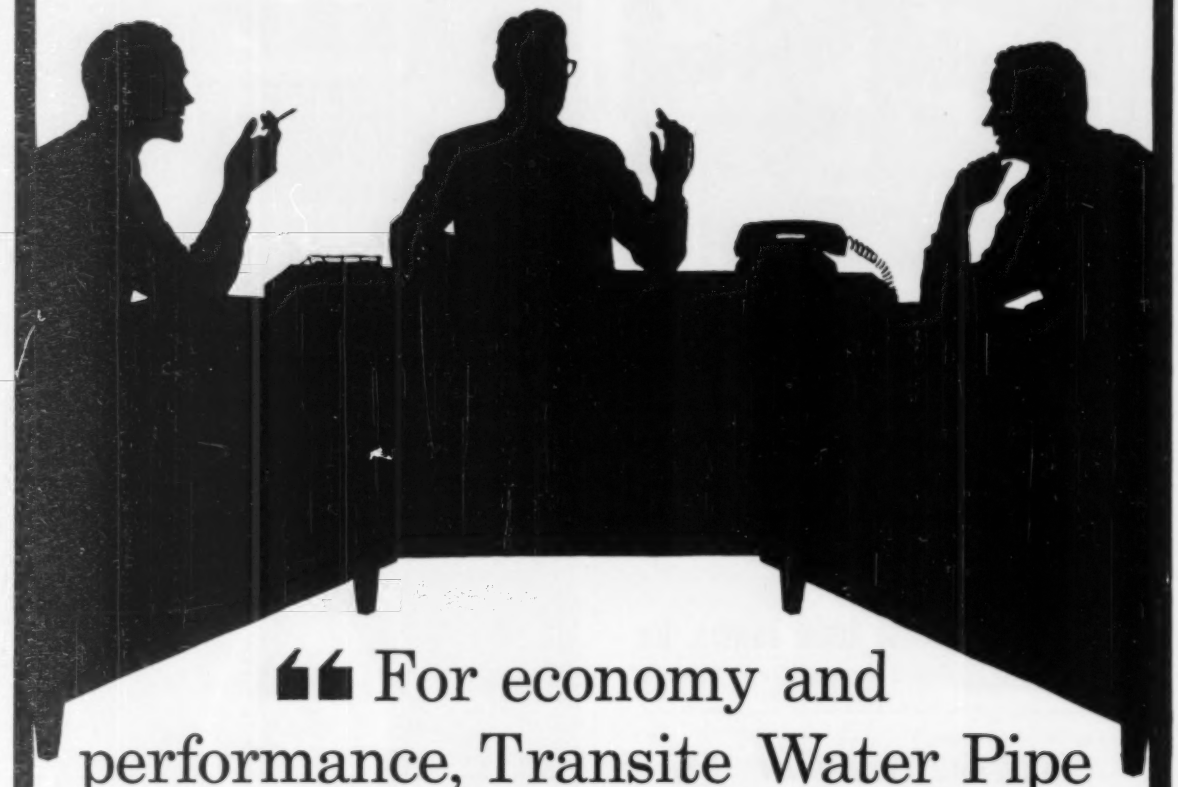
Ferric Sulfate

We can help you with coagulation and softening, removal of iron and manganese and other water purification problems. **Ferri-Floc** does an outstanding job in producing purer process water, and we have reliable technicians to assist you at any time. Let us send you complete information on **Ferri-Floc**.

SODIUM SILICOFLUORIDE
A white powder or granule (dyed blue if desired) for fluoridation of potable water.

TC TENNESSEE CORPORATION
612-629 Grant Building Atlanta 3 Georgia

Three County Commissioners from Ohio report:



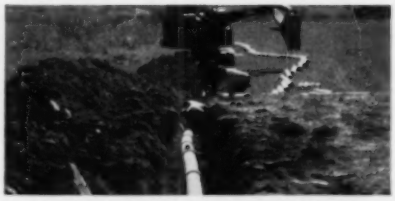
"For economy and performance, Transite Water Pipe is still our main choice."

Belmont County, Ohio, Commissioners William H. Dorsey, Austin C. Furbee and Louis T. Salvador.

"Belmont was one of the many counties that experienced a building and population boom. Fortunately, our officials had the foresight to recognize its ultimate effect on our water system and service. As early as 1953, plans were made to meet future demands. Surveys were made . . . operating men and engineers were consulted . . . pipe materials investigated.

"In 1956, we extended our water system 13 miles. The installation and operating economies are now a matter of record. The successful performance of the extension is attributed to careful planning, helpful advice and, in part, to the selection of Transite Pipe.

"When we began designing another expansion of the system for 1960, our previous experience made Transite the main choice. The Belmont Water System now has 53 miles of Transite installed in rocky terrain and corrosive soils. The excellent performance of the first 13-mile section leads us to believe that Transite will provide economical maintenance and operation for many years."



For the full Transite® story, write Johns-Manville, Box 14, AC-2. New York 16, N. Y. In Canada: Port Credit, Ontario. Cable address: Johnmanvil.

JOHNS-MANVILLE PRODUCTS

JOHNS-MANVILLE
TRANSITE PIPE
THE WHITE PIPE THAT PROTECTS PRICELESS WATER

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Snow Removal Is Faster

219 . . . and more efficient when truck-mounted plows are cab-operated by one man actuating power hydraulic controls. For complete information on battery-operated and fan-belt driven plow controls, write MONARCH ROAD MACHINERY CO., 1331 MICHIGAN ST., N.E., GRAND RAPIDS 3, MICH.

Warning Lights and Barricades

220 A new 16-page catalog showing the entire line of Esco Flare warning lights and barricades has just been published by ELECTRONIC SPECIALTIES CO., BATAVIA, ILL. It gives complete specifications and descriptions for every type of transistorized light made by Esco.

Street Sweeper News

221 A power sweeper brochure offered by WAYNE MFG. CO., 2436 E. LEXINGTON ST., POMONA, CALIF., will acquaint you with the company's current complement of power street sweepers. Another brochure outlines the Wayne street sweeper rental plan for municipalities.

Rugged Loader-Backhoe

222 What makes a loader-backhoe able to "take it" on those really tough jobs time after time? MASSEY-FERGUSON INDUSTRIAL DIVISION, 12601 SOUTHFIELD RD., DETROIT 32, MICH. says it's "engineered dependability." For details, write the company.

New Sources for Rock Salt

223 With 14 new, strategically located rock salt storage depots, DIAMOND CRYSTAL SALT CO., ST. CLAIR, MICH., can give you faster service for snow and ice removal salt, help you meet your salt requirements in the shortest possible time. New depot locations given on request.

All-Weather Oil for Parking Meters

224 A new heavy-duty synthetic instrument oil for parking meters and fine mechanisms where extremes in temperatures and humidity are a factor is announced by ZENITH MFG. & CHEMICAL CORP., 82 BEEKMAN ST., NEW YORK 38, N. Y. Noncorrosive and nongumming, it has a flow point at —70°F. with complete lubrication to +350°F.

Wedge-Lock Clay Pipe

225 This pipe is reported to give triple protection against infiltration exfiltration and roots, reduce loads in sewerage and in plant pumping. Its wide acceptance is confirmed in a just-off-the-press brochure describing Wedge-Lock installations. For a copy write to any of the following manufacturers: CANNELTON SEWER PIPE CO., CANNELTON, IND.; THE CLAY CITY PIPE CO., UHRICHSVILLE, IND.; GRAFF-KITTANNING CLAY PRODUCTS, WORTHINGTON, PA.; LARSON CLAY PIPE CO., DETROIT, MICH.; LEHIGH SEWER PIPE & TILE CO., FORT DODGE, IA.; THE LOGAN CLAY PRODUCTS CO., LOGAN, OHIO; THE OWENSBORO SEWER PIPE CO., OWENSBORO, KY.; POMONA TERRA-COTTA CO., GREENSBORO, N. C.; THE ROBINSON CLAY PRODUCT CO., AKRON, OHIO; SUPERIOR CLAY CORP., UHRICHSVILLE, OHIO.

Money-Saving Offer

226 TRACTOR AND IMPLEMENT DIV., FORD MOTOR CO., BIRMINGHAM, MICH., reports that it will pay half your fuel bills for six months, or 400 tractor hours, on the purchase of any new Ford or Fordson diesel tractor. Offer is good till March 31, 1961, so write now.

Chips Brush On the Spot

227 Brush disposal costs spiral downward when brush, branches and tree trimmings are reduced to chips instantly and on the spot. FITCHBURG ENGINEERING CORP., DEPT. AC-12, FITCHBURG, MASS., can give you positive proof of this.

Rapid Sand Filter Control

228 *Bulletin* 450 describes the operation of sand filter controls in automatic water treatment plants and shows a complete pneumatic filter control system with auxiliary instrumentation which is stable and free from cycling. Write BAILEY METER CO., 1050 IVANHOE RD., CLEVELAND 10, OHIO.

Use of Copper Sulfate in Pools

229 This booklet explains in detail how swimming pool water can be kept crystal clear by proper use of copper sulfate. It's written by Gordon Scott Little, head swimming coach at Cornell University. For a copy, write PHELPS DODGE REFINING CORP., 300 PARK AVE., NEW YORK 22, N. Y.

Chain-Driven Power Mowers

230 These mowers are available in two models and in four basic sizes. Their balanced, chain-driven synchronized cutters cut grass clean. New Data Sheets give full facts; write LOCKE MOWER DIV., THE LOCKE STEEL CHAIN CO., 1315 CONN. AVE., BRIDGEPORT 1, CONN.

(See page 72 for more Bulletins)

Original Overlapping Link Design on Illinois Incinerators Eliminates Possible Clogging or Damage

Burning Stoker with drying Stoker in background set up for testing. Typical of models used in Gansevoort plant, New York City and Providence, Rhode Island installations.

Overlapping Design of links or keys on both the chain-grate and bar-key models prevents clinkers or non-flammable items from catching between the links causing possible damage to the stoker and reduces sifting of material through the grates.

Cast Steel links are used on both models unless otherwise specified, as cast steel affords greater resistance to heat and abrasiveness than does ordinary cast iron.

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Gentlemen: We're interested. Please send full details.

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FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Pep Up Your Water Filters

231 A circular now available from PALMER FILTER EQUIPMENT CO., P. O. BOX 1655, ERIE, PA., points out how and why the Palmer surface wash agitator requires about 40% less wash water, enables you to increase filter runs up to 50%, prevents cracking and shrinking of beds.

Coin Handling Equipment

232 *Catalog* No. 68 will acquaint you with the full complement of coin handling equipment made by ABBOTT COIN COUNTER CO., INC., RIVERDALE AVE., GREENWICH, CONN. Included are change dispensers, coin counters, assorters and wrappers, coin bags, certifiers.

Planning a Picnic Site?

233 You'll find helpful an illustrated leaflet that describes, notes special features and gives specifications for picnic tables that allow easy seating and for both portable and stationary Grill-Rite stoves. For a copy, write EVERWEAR MANUFACTURING CO., INC., NEWPORT, KY.
ture.

Powers 30 Tools

234 One 6.6-hp Gravely tractor can keep power on your grounds maintenance jobs the year 'round and will do any job from snow removal to mowing. "How to Cut Costs for Grounds Maintenance" will provide you with all details. Write GRAVELY TRACTORS, P. O. BOX 636A, DUNBAR, W. VA.

Controls for Water Works

235 Complete bulletins containing application information, engineering data, mechanical and electrical specifications for the Roto-Trol line of automatic controls for water works and sewage installations can be obtained from HEALY-RUFF CO., HAMPDEN AVE., ST. PAUL 4, MINN.

Municipal Incinerator

236 In describing this new reciprocating grate incinerator stoker, *Bulletin* 701 gives full details and specifications and points out that it can be factory-assembled in modular units for any size incinerator. Write DETROIT STOKER CO., DIV. OF UNITED INDUSTRIAL CORP., MONROE, MICH.

Two-Wheel Street Flusher

237 An efficient machine for street flushing, this 100-gallon capacity unit can also be used for sprinkling operations, fire fighting, power pumping and other water application. *Specification* 550-B gives full facts on Model MFR. It can be obtained from ROSCO MFG. CO., 318 SNELLING AVE., MINNEAPOLIS 6, MIN.

Multipurpose Sprayer

238 As a rapid shade-tree sprayer, Turn-A-Spray uses the air carrier method; as a mosquito killer, it operates as sprayer, granule thrower or duster. Details and benefits are pointed up in literature available from BESLER CORP., 4053 HARLAN ST., EMERYSVILLE, OAKLAND 8, CALIF.

Steel Swimming Pools

239 . . . are the subject of a 24-page booklet, which gives full details as to sizes, shapes, pool accessories, construction and maintenance—and even tells how to select a pool site. For a copy, write AMERICAN BRIDGE DIVISION OF UNITED STATES STEEL, 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Money-Saving Maintenance Equipment

240 Size of your paving job not warrant use of a regular size distributor? Field experience has proved the Model MU a dependable, economical and efficient performer for smaller operations. *Data Bulletin* No. 352 gives details; write E. D. ETNYRE & CO., OREGON, ILL.

Service Bulletin 100

241 . . . describes the complete water services offered by LAYNE & BOWLER, INC., MEMPHIS 8, TENN., which run the gamut from initial surveys, explorations and site selections to pumps, construction of water systems, maintenance, service and chemical treatment of wells.

Customized Incinerator Stokers

242 By writing to ILLINOIS STOKER CO., DEPT. AC-261, ALTON, ILL., you can obtain literature on both chain-grate and bar-key incinerator stokers of link design, which eliminate possible clogging or damage and have been proved in successful municipal incinerator operation.

Sanitary Drinking Fountains

243 You'll find a wide selection of outdoor and indoor drinking fountains with automatic stream control as well as many types of coolers and combination cooler-drinking fountains in current complete-line catalog literature being offered by THE HALSEY W. TAYLOR CO., 137 NORTH ST., WARREN, OHIO.

Mud Hog at Work

244 MARLOW PUMPS, DIVISION OF BELL & GOSSETT CO., MIDLAND PARK, N. J., reports new information available on its Mud Hog line of diaphragm pumps, which are built to be especially clog-proof so they can pump water, sewage, sluice, sand and trash-laden liquids at a trickle or full capacity.

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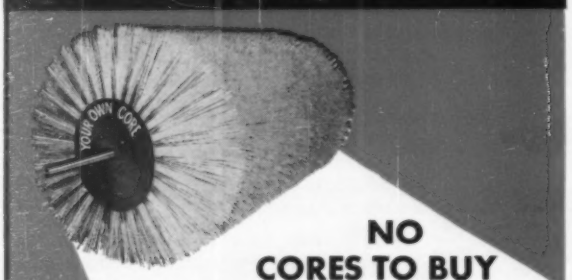

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AUSTIN-WESTERN 60	$230.75	$333.20

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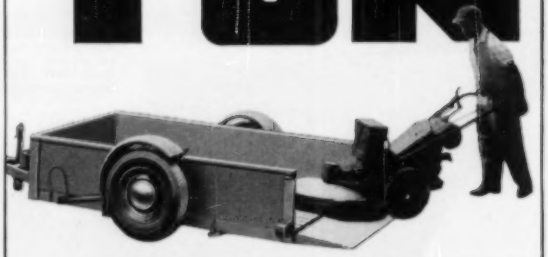

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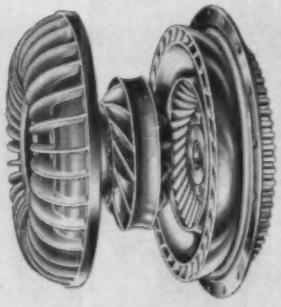

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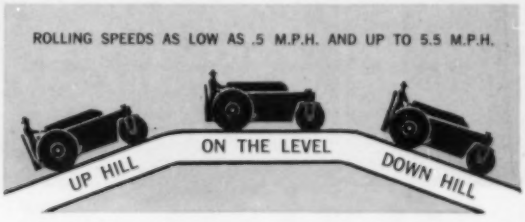

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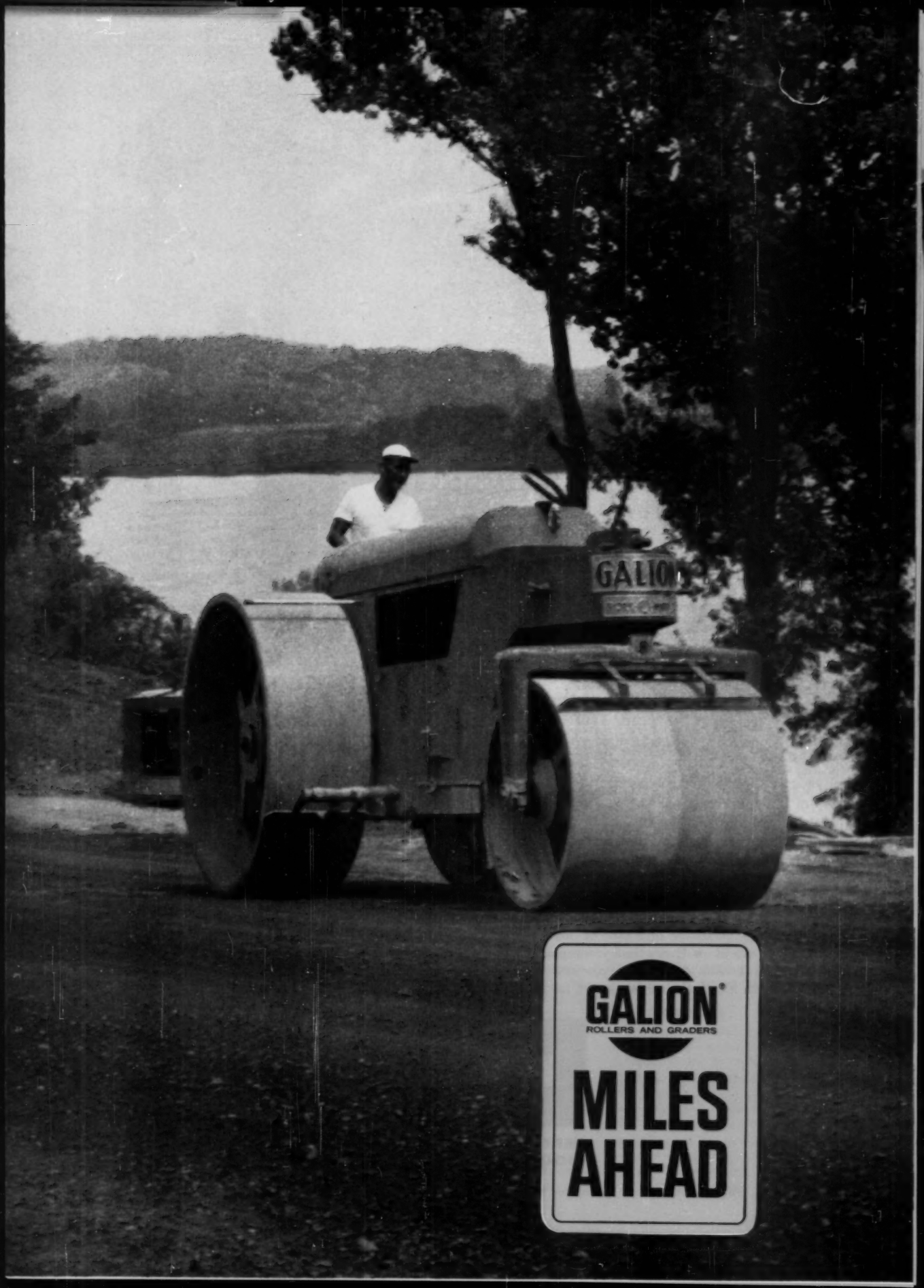
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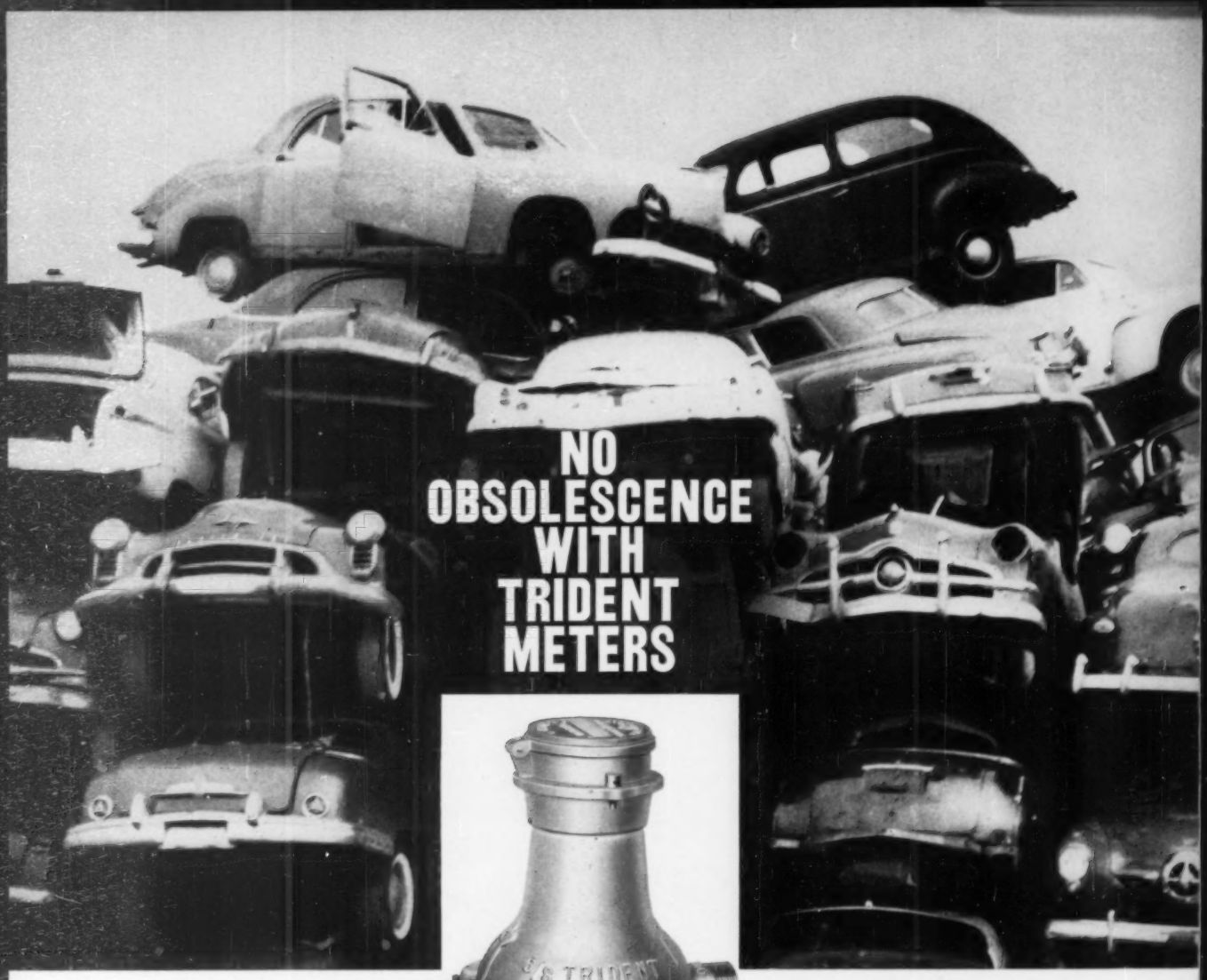

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FEBRUARY 1961

The American City

A sub-contractor, using an Allis-Chalmers grader to scarify the old pavement, prepared the streets ahead of the soil-cement construction.

South Milwaukee, Wis., ends "free" low-quality street construction, upgrades paving practice with a soil-cement program and realizes . . .

$62,000 Saved in One Year

By C. R. DINAUER*

Only a few years ago the little city of South Milwaukee would spend as much as $80,000 per year for gravel alone to "rebuild" streets. Today these items don't appear in the budget.

During the 1960 construction season, the City of South Milwaukee reconstructed a total of 10.59 miles of a total street mileage of 59.80 miles open to traffic. This included 9.17 miles of bituminous concrete over soil-cement base, resurfacing of 0.97 miles of either existing brick, concrete or macadam pavements and the reconstruction of 0.45 miles of State Highway 32 by state contract. This street-improvement work followed the adoption in 1959 of an ordinance to permit assessment of street construction which had been unheard of in South Milwaukee prior to bituminous concrete over soil-cement base.

South Milwaukee, located on the shore of Lake Michigan ten miles south of downtown Milwaukee, has an area of 4.8 square miles. Population increased from 12,800 in 1950 to 20,200 in 1960 with no annexations or increase in area.

The soaring cost of maintaining the many miles of oiled gravel streets served as the primary reason for this program. Its inauguration came after years of study and discussion by Mayor W. P. Atkinson and other city officials. The budget reflects the effect of the program. For example, road material costs had risen to a high of some $80,000 in the 1957 budget, while the 1961 budget contains only $18,000 for the same item. Paving some of the worst of the heavy-maintenance streets made this reduction possible.

Permanent paving also made possible the reduction in the number of permanent employees in the Street Department. Others have been diverted from street maintenance.

Field Tested

The city's initial experience with soil-cement construction took place in 1953 under the direction of E. F. Spitzer, now Engineering Editor of The American City and at that time City Engineer of South Milwaukee. The 1953 program consisted of 6,500 square yards of six-inch soil-cement base on a heavily traveled street on our north city limits. This work cost 80 cents per square yard with seal

* Mr. Dinauer recently resigned as city engineer for South Milwaukee to accept a position with the Madison, Wis., Planning Department.

The basic procedure in South Milwaukee's paving program consisted of preparing the base with a Pulvi-Mixer . . .

. . . applying cement with a grader-mounted spreader . . .

. . . mixing the ingredients by means of this self-propelled P & H stabilizer . . .

coat. In 1956, two inches of bituminous concrete was laid over the soil-cement base. In 1957, the city installed 1.16 miles of six-inch soil-cement base and two-inch bituminous concrete on a heavily traveled feeder route on the western city limits of South Milwaukee. The surface course on both the above streets was laid in one course. The city's experience with these roads formed the basis for their selection of soil cement for the 1959 and 1960 programs.

The only serious objection raised to the idea of assessing the cost of the paving against the abutting property owners was the interest rate the city anticipated charging when the street was to be paid for on the ten-year installment plan. As a result this was reduced to 4% for 1959 and 1960.

Price Line Held

The R. C. Borchert Engineering and Supply Company was the successful bidder for the 1959 program. This consisted of 14,000 square yards of soil-cement base with 8.5% cement content constructed at a cost of $0.976 per square yard. Payne and Dolan of Wisconsin supplied the bituminous concrete for a single-course two-inch wearing surface for $9.75 per ton in place. The assessment for each side of the street for a 36-foot pavement (curb and gutter already in place) amounted to $4.50 per foot.

The 1960 program affected about 2,200 property owners, of which about 150 appeared at a public hearing—some to voice their objections. To better acquaint the taxpayers with the program, the Council arranged a special meeting and asked Mr. Eugene Goeb, Portland Cement Association Field Engineer, to show a movie on the subject and answer questions. Soil-cement cores and descriptive literature were available at City Hall for interested people.

Following this meeting the Council adopted the program and advertised for bids, breaking the program into three sections. The Streets and Roads Construction Company of Milwaukee submitted low bids for each section as well as the total job and was awarded the contract.

The bid price for the six-inch soil-cement base (8.5% cement content) was $1.05 per square yard. The increase over 1959 was due solely to an increase in cement price from $4.00 to $4.90 per barrel. However, the two-inch, single-course bituminous-concrete wearing course was bid at only $8.60 per ton. Thus, we were able to hold the assessment to the $4.50 per foot charged in 1959. An additional $2.25 per foot was assessed wherever new curb and gutter was constructed.

The $509,000 contract consisted of constructing about 25,000 lineal feet of new curb and gutter, 181,000 square yards of base construction and applying the surface course requiring 23,300 tons of bituminous concrete. The R. C. Borchert Engineering and Supply Company and the E & C Company were sub-contractors on the base work and the Lifetime Construction Co. installed curb and gutter and graded streets ahead of base construction work.

This program also required the installation of some 130 water services and sewer laterals to vacant lots. This was handled by a separate contract awarded in early spring. In addition, the Wisconsin Natural Gas Company replaced 22,500 lineal feet of mains and laterals, employing up

. . . and using a Barber-Greene paver to apply the bituminous-concrete surface course and a Buffalo-Springfield roller for the final compaction.

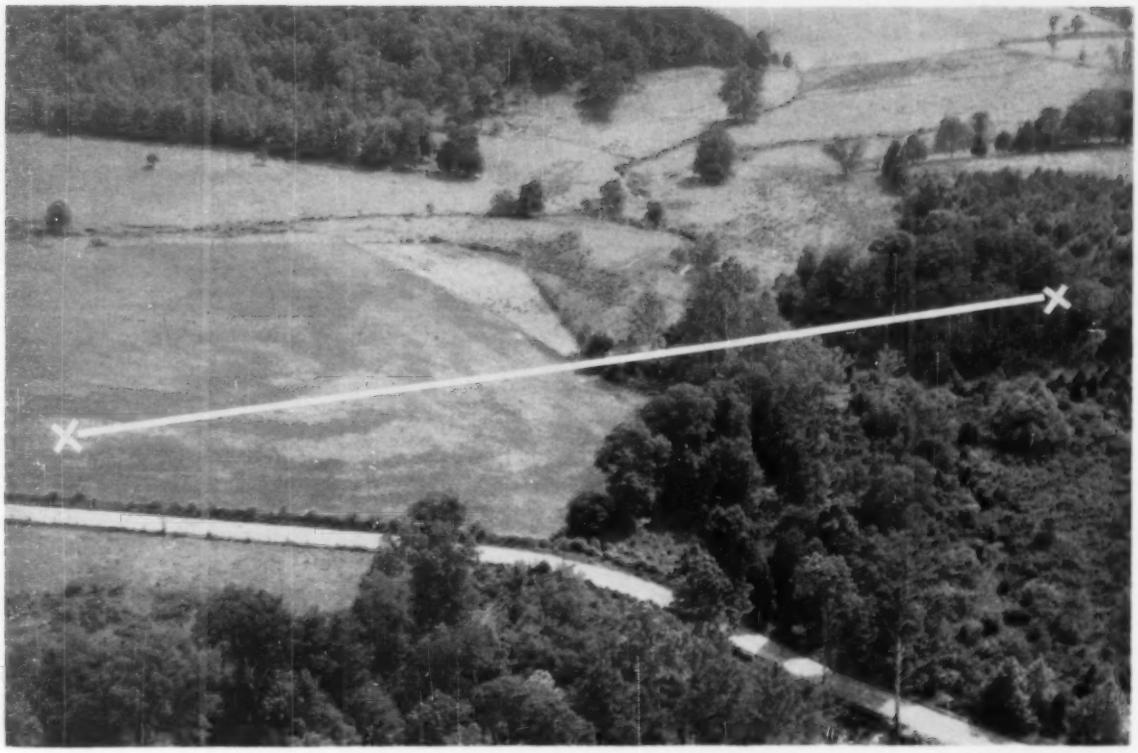
to four crews to keep ahead of the paving work.

We also turned to outside help for inspection, utilizing the services of the Milwaukee Testing Laboratory, with Richard Griffith as resident inspector. We felt the employment of experienced personnel to run moisture and density tests and control cement spread to meet varying soil conditions was worth the $0.04-per-square-yard cost since it freed city personnel for the normal work program and still assured the city of proper construction.

Public Acceptance

Gaining the acceptance of the people for such a program, with the cost assessed to the abutting property owners, was the most important task. In our opinion pamphlets sent out with the 1959 annual report explaining the program went a long way toward reducing objections at the public hearings. In addition, the editor of the *South Milwaukee Voice-Journal*, our local paper, provided space for several articles by Mayor Atkinson on the program. With the 1960 program wrapped up, the City Plan Commission is already devising a substantial project for 1961. ◄◄

A tractor-drawn vibratory roller was used to compact soil cement.



The site of the dual purpose dam, with the solid line showing the actual location.

Water Project Pumps Life into a City

A small Virginia community includes a watershed in a conservation plan to obtain the aid of the federal government.

By **LESTER FOX***

Culpeper, Va., had a long-standing water problem. First, there was too much—in the form of floods; then there was too little, forcing town officials to search for the next day's supply. But events over the past three years changed the pattern, thanks to Public Law 566, an act passed by Congress in 1954, and the city's wisdom in taking advantage of it.

The city did try to correct its water problems without outside help. Back in 1930, when Mountain Run, the main source of supply, showed signs of going dry the city dug an emergency well. It provided only 30 gpm, but even this small amount came in handy during periods of drought.

The next step consisted of filling an abandoned quarry in spring and drawing on this supply in emergencies. Finally, when the main supply went dry in 1954, Culpeper invested $12,000 in a second well that produced 500 gpm, but the water was extremely hard.

While all this did help the water supply to some extent, floods still occurred and a large section of the land at the edge of the town known as "The Meadow" remained unfit for development.

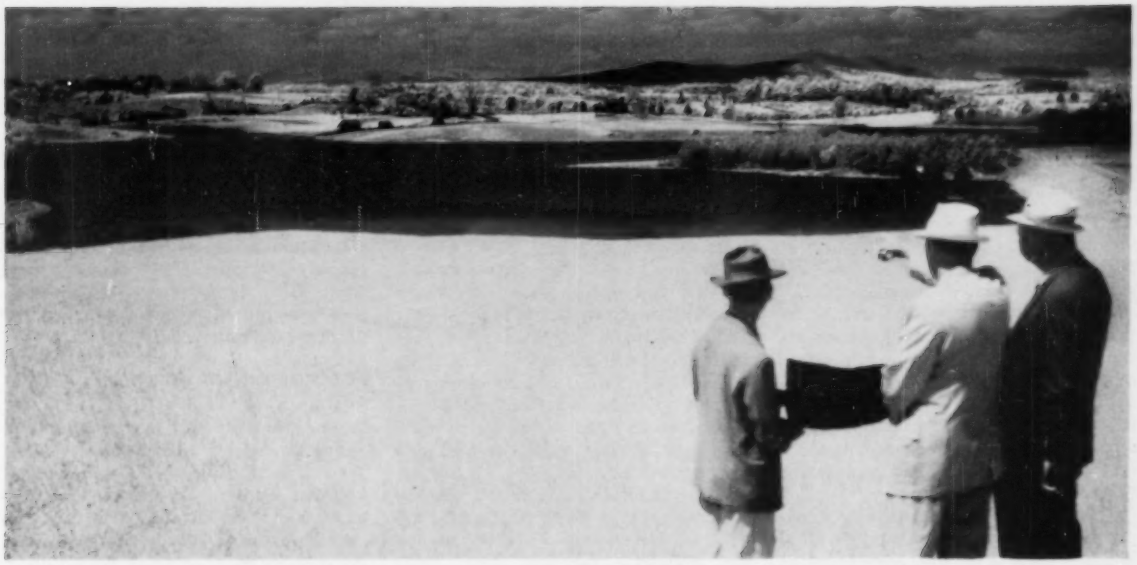
After the 1954 scare, the city council voted to engage an engineering firm to make a study of possible new sources of water. Upon learning that the study alone would cost $17,500, the councilmen threw up their hands. It was at this point that they learned about Public Law 566.

The Law

Public Law 566 provides the machinery for local people to bring a watershed under a conservation plan. Although its primary purpose is flood prevention, amendments to the act help local areas build reservoirs for more than flood prevention —for city or industrial water supply, irrigation and promotion of useful wildlife.

These extra uses add to the project's value, but agricultural interests remain dominant. Culpeper's plan called for conservation treatment of farmland to keep the soil in

* Mr. Fox is with the Field Information Unit, United States Department of Agriculture, Soil Conservation Service, stationed at 7600 West Chester Pike, Upper Darby, Pa.



In addition to flood prevention and water supply, Mountain Run Lake will provide a recreational center for local residents.

The "Meadow," a once-useless area, is now attracting industry and business; the construction shown here is for a local car dealer.

place, improve the fertility of the land and make local farming more profitable.

Under the law the local people obtain all needed easements before work begins. They must also share in the project's cost. Included in local cost sharing are outlays for conservation measures applied by the farmers to their land to keep the soil in place and out of the reservoir. Also included are contributions in cash, materials or work contributed by other agencies or private firms. The Soil Conservation Service of the United States Department of Agriculture maintains technical responsibility for the entire conservation project.

After learning what could be done under PL 566, the councilmen voted to co-sponsor the Mountain Run watershed project with the Culpeper

Before the construction of the watershed project water was pumped into this abandoned quarry each spring for use in emergencies during the year.

Soil Conservation District and appropriated $65,000 for the work. The people of the area formed the Mountain Run Watershed Association and the Conservation District established an executive committee to run the business like a board of directors. The committee consisted of three representatives of the Association, together with Vice-Mayor Giles H. Miller, representing the city, and T. G. Ragsdale, a farmer and a supervisor of the Conservation District.

A major portion of the plan consisted of building three flood prevention dams and clearing and improving five miles of the stream channel in the "Meadow" area below the town. One dam is a dual purpose structure designed to store 500 acre-feet of water as an extra supply for the town.

Work on the 40-foot-high dual-purpose earth dam started in November 1958 and was completed in July 1959. Named Mountain Run Lake, the impounded water drains from 3,750 acres. The sediment pool and the normal pool cover an area of 75 acres.

In addition to the 588 acre-feet of water in these two pools the lake will store 1,200 acre-feet for flood prevention. This water passes slowly through the dam via a drop inlet into the stream channel. When filled to spillway crest, the lake covers 160 acres.

The other two dams are for watershed protection and flood prevention only. Each job was awarded through competitive bidding and done by a different contractor. Clearing of the channel took place in the summer of 1960.

The entire watershed project cost about $545,000, of which the federal government contributed some $168,000. The remaining $377,000 represents the local share. Contributing to the local share, the Virginia Commission of Game and Inland Fisheries planted vegetation to provide food and shelter which would encourage useful wildlife.

Utility companies changed pole locations where necessary and the Virginia Division of Forestry helped the district's farmers with their woodland work.

The Highway Department grassed down roadside banks to keep the soil from washing into the stream and thence into the reservoirs. The actual outlay by the city amounted to only $60,000.

This $60,000 expenditure on the part of the city actually brought new life into an all-but-failing community. At an average use of 18,000,000 gallons per month, the 500 acre-feet of water provide well over six months' supply should the stream go dry.

With this assurance of available water new industry has moved into the area and others are contemplating such a move. One firm having an option on local property would employ 200 people. A sports knitwear firm employing 300 persons just completed construction of a plant in Culpeper.

Recreational Areas

The city purchased five acres between the lake and a roadway for development of recreational facilities. The lake will be used for fishing, swimming and boating. Removal of the flood threat permits more intensive use of the farm land. Finally, a shopping center is now under construction on the former "Meadow."

Besides creating new interest among the farmers and town people, the watershed project built up good will between the two groups and gave them an appreciation of their common problems and contributions to the area. ◄◄

Compact Cars Cut California Costs

From Metropolitans for parking control to Larks for all-round field work, small cars are saving close to four cents per mile. Since 1959 E. J. Petersen, principal buyer for the California State Department of Finance, has bought some 600 Larks. All were purchased experimentally, to test costs and to see how state employees liked driving them.

"Today we have more requests for compacts than we have compacts," reports Petersen, who will order another 300 this year.

State operation figures are low. Exclusive of gasoline they run about 7/10 cent per mile as compared with one cent for the bigger Fords, Chevrolets and Plymouths which comprise the balance of the state's auto fleet. Gasoline stretches to 23 and 24 miles per gallon against 18 for the standards.

This spring, Los Angeles County's Chief Administrative Officer L. S. Hollinger placed 25 domestic compacts on duty as utility vehicles for field workers, in car pools and assigned cars. Fifteen of them were tested within the general county operation, three each of Rambler, Falcon, Lark, Valiant and Convair.

In the first three-month test among all models, operating and maintenance costs averaged $0.0164 per mile, including gas and oil, lubrication, washing and minor adjustments, tire changing and normal maintenance, according to figures released by the County's Mechanical Department.

Will the compacts eventually replace their Detroit cousins? "No," say the experts, "neither for prestige travel nor in heavy service. You can't transport prisoners in them safely; you can't catch an 80-mile-an-hour speeder. They're too underpowered and too lightly constructed to hold up under hazardous operating conditions.

"On the other hand, a compact's value lies in the fact that it *is* small, therefore spry and inexpensive. It's great for the field worker who doesn't need greater horsepower nor a bigger car—but where any smaller car would be too small."

County Officer Hollinger sums it up: "Like every other public agency, we're seeking the most economical method of meeting public transportation needs. As long as the compact cars accomplish this purpose we will continue to expand our usage of them." ◄◄

Burbank, too, has found that compacts save money. The city's Metros cover 1,000 miles on 50 gallons of gas and five quarts of oil. Lieut. Albert Stariha, traffic bureau commander, uses nonsworn personnel and the majority of the driver-operators are women.

Swim All Season for $12 per Family

. . . in the new pool which serves the 6,552 persons in Newton, N. J.

By DANA WHITMAN, Jr.
Town Manager

Small fry give the wading pool a work-out. The grading of the grounds and the construction of the bathhouse, at this stage, remained to be completed.

Our community receives less money in fees than we pay out in operating costs for our new pool, but we believe that the service provided is well worth the expenditure. A season ticket for a family living in town sells for $12. An out-of-town family pays $20. Season tickets for individuals sell for one-half the family rate. Daily rates for adults are 50 cents on weekdays and $1 on holidays and week-ends. Children's daily rates are one-half of the adult fees. Receipts of $3,650 fail to meet operating costs by $2,150.

The pool consists of a 40-by-100-foot swimming area with a 35-by-41 foot diving el. A four-foot-high chain-link fence separates the 25-foot-diameter wading pool from the main pool. The depth of the wading pool ranges from six to 18 inches. Concrete walks not less than 15 feet wide extend around the main pool and wading pools. Encircling the entire area, a chain-link fence six feet high provides privacy and control.

A 30-by-60-foot concrete-block bathhouse offers separate toilet, shower, lavatory and dressing space for men and women. In addition, 36 Sentinel coin lockers and 96 open-bin lockers provide the necessary storage. Customers enter the bathhouse at the end and proceed through a corridor to the central lobby. Here at a counter they obtain daily or season admission and proceed into the dressing and shower rooms. The counter serves to deny them entry to the pool until they pass through the dressing rooms and showers.

The pool operates for approximately ten weeks during the summer. A staff of five, the pool manager, the head lifeguard and three other lifeguards, maintains and operates the facility.

The pool, discussed for years as a community need, became a reality when a leading citizen of the community donated $40,000 for that purpose. Other donors furnished another $6,425.09. The balance of the funds came from the municipality and its recreation commission out of tax monies and special funds.

Capital Costs

Capital costs totalled $67,500. The main pool and wading pool, including two Detrex Model 2-100 diatomaceous earth filters, eight underwater lights, two diving boards, four ladders, one Model A-741 V-Notch Wallace & Tiernan chlorinator, etc., were let in one contract of $32,915. Electrical work, fencing, interior painting, counters and the office area in the bathhouse were constructed by subcontractors employed by the town. Employees of the town built the building and walks and installed the plumbing. Newton acquired the two-acre pool site immediately adjacent to an existing park and playground. The existing park provides parking area for the pool and playground equipment for the use of all residents and pool users.

Pool construction started in April 1959. Early August saw the pool, without the bathhouse, opened for use. During the following winter and spring the bathhouse was completed; and in 1960 the entire facility opened on June 25th, exactly on schedule.

Immediately adjacent to the pool but outside the fence enclosure lies a parcel of land which measures approximately 200 by 150 feet. This area will be developed in 1961 to provide handball and shuffleboard courts, volley ball, tether ball and other related games for the use of persons enjoying the pool facility. A screening hedge in the rear of the pool site and other landscaping remain to be completed.

The pool was formally dedicated on August 14, 1960. A plaque on the wall in the main lobby of the bathhouse lists the major donor and all other donors of $100 or more by name. Competitive swimming and diving events with appropriate trophies highlighted this day.

Before the pool opened for the current season, we prepared a pool staff manual for the guidance of pool personnel. This manual, containing about 19 pages, outlines duties and responsibilities for all personnel, fees, hours, pool rules and procedures for normal operations, winterizing, and reopening of the pool.

We experienced some operating difficulty, when the pool first opened, from the iron in the water which reacted with the chlorine to cause brownish water and a heavy precipitate. More careful control of pH and chlorine enabled us to overcome this problem.

The pool closes from 10 a.m. to 12 noon daily for Red Cross swimming instruction. We expect that more than 150 youngsters will receive this valuable instruction every year. Newton's pool is, indeed, performing a valuable service for its residents. ◄◄

The dual function of the sanitary landfill is to dispose of refuse in an acceptable manner and to reclaim land for useful, frequently for tax-producing, purposes; the park area and the electric substation shown here occupy a completed portion of this operation.

The Sanitary Fill—How It Operates

Part I: What it is, and data on how it functions in cities with commendable fills

The sanitary fill is the only practical alternative to incineration for refuse disposal in the United States. No one should ever consider the open dump. Its record as a carrier of disease, potential fire hazard, generator of odors and pests and bad aesthetic appearance is too long to merit consideration. To date, composting has not proved itself in the United States. Phoenix, Ariz., recently contracted for the construction of a composting plant and one has been operating for several years near Sacramento, Calif. Various types of composting plants are also operating in foreign countries, but they do not exist in sufficient numbers to establish a trend.

The mere existence of an open dump means land is available for refuse disposal — and regardless of conditions or topography, this can be accomplished in a sanitary manner at relatively low cost. One exception may be the complete unavailability of cover material or its location at such a distance from the fill site as to make hauling uneconomical. If this is the case, the dump should be covered and incinerators should be constructed.

Under most conditions one of the three basic techniques available for the construction of a sanitary fill will serve the purpose. They are:

- **the trench method**
- **the area method**
- **the ramp method**

Many municipalities have solved problems peculiar to their locality by using variations or combinations of these methods. Filling small ravines and building up low areas is commonplace, and numerous cities use the trench and ramp methods where the terrain is flat or gently rolling. But the record also shows that the sanitary fill can be used to reclaim a swamp as in Seattle (THE AMERICAN CITY, March 1957, p. 110), to push back a river (THE AMERICAN CITY, December 1959, p. 92), or to fill a deep canyon (THE AMERICAN CITY, December 1960, p. 88).

A three-part discussion on how the sanitary-fill method of refuse disposal is improving health and sanitation within American municipalities.

Type of soil, depth of cut and even climate have little effect on the operation, for today equipment is available to meet practically any condition. The appearance of the disposal site, whether it be a burning, rat-infested dump or a clean, sanitary operation, depends upon the will of the people and does not depend upon physical obstructions.

Besides providing an acceptable way of refuse disposal, the sanitary landfill also serves to reclaim wasteland for productive use. Parking fields, recreational facilities, parks, industrial sites, airport runway extensions and reclaimed cropland are but a few examples. In some cases, sanitary landfills can be money makers as in Highland Park, Ill. (THE AMERICAN CITY, October 1960, p. 23) or serve some unusual purpose as in Mount Holly, N. J., where such an operation is restoring a Revolutionary War site (THE AMERICAN CITY, November 1960, p. 30).

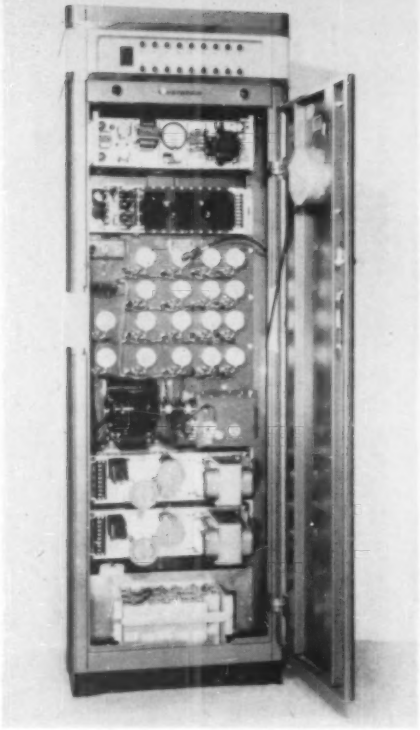
Following is a summary of significant operating details and other pertinent data on active sanitary fills throughout the country. *The table will be continued with Part II of this discussion which covers the basic principles of all sanitary fills and with Part III which describes the three basic methods of operation.* ◄

City	People Served	Annual Volume t=tons cy=cubic yards	Type	Depth Refuse	Depth Cover	Cover Material	Years in Operation	Settlement	Crew Size	Annual Acre Feet	Annual Operating Cost	Evidence of Decomposition	Equipment Used
ARIZONA													
Phoenix	500,000	1,400,000 cy	area	10′	3′	sand	9	3″ per year	12	.....	$245,218	slight and infrequent.	2 D 7 Caterpillar Crawlers with Dozer, 1 10-Yard Caterpillar Scraper, 1 2LC-103 Michigan Rubber Tired Tractor with Dozer 1 8-yard Southwest Scraper
ARKANSAS													
Little Rock	120,000	150,000 cy	....	18′	2′-3′	clay and loam	10	1-2%	2 on equip. 1 grease-oilman	....	$18,000	none	½-yard Insley Drag line, D 6 Caterpillar Tractor and Dozer
ALABAMA													
Birmingham	360,000	140,000 t	progress ramp	6′-8′	2′	clay	18	very little	3 each fill	....	$100,000	none	2 D 6 Caterpillar Dozers, 2D 6 Caterpillar Traxcavators with 2-yard Bucket, 1 John Deere 7½-yard Scraper, and 1¾-yard Northwest Shovel
Florence	38,000	52,000 t	trench and ramp	4′	2½′	sand and clay	6	none	1	5	$10,000 approx.	none	TD International, International Front End Loader with 2½-yard Bucket
Mountain Brook	15,000	5,700 t	trench	4′	2′	loam	2½	unknown	1	....	$10,000	none	955 Caterpillar Front End Loader, 1½-yard Bucket
CALIFORNIA													
Alameda	70,000	100,000 cy	trench	10′	1′	quarry run	4	30″ in 4 years	1	20	$7,000	occasionally slight odor	1 D 8 Caterpillar with Bulldozer
Bakersfield	54,000	37,887 t	area	7′	6″ daily 1′ final	granitie clay-loam	3½	unknown	3	57	$1.272 a ton	none	1 AC HD 16 Tractor-Dozer with a 10′ blade, 1 Ateco 12-yard Scraper
Berkeley	108,000	81,000 t	area	three 6′ layers	2′ per layer	dirt	36	2′ in 10 years	5 full 4 part	180	$80 per ton	none	1 TD 14 International Tractor, 1 D 7 Caterpillar Tractor
Burbank	93,000	175,000 cy	area	3′	1′	decom. granit, clay	10	14″ in 4 years	2	110	$0.29 per cy compacted	none	2 D 8 Caterpillar Tractors, 1 Gar Wood Carryall, 1 Caterpillar 28 Rooter, 1 Sheepsfoot built by the city, I Water Tank, 1 GMC Truck
Clovis	7,000	7,488 t	trench	12′	2′	clay	4	1′ per year	1½	1	$3.000	none	1 HD 5 Allis-Chalmers Tractor with Bucket
Fresno	130,000	68,952 t	trench	26′	3½	clay and loam	23	2′-3′ in 23 years	3	6	$1.14 per ton	occasionally	1 Caterpillar DC 6 Tractor, 1 International TD 24 Tractor, 1 1½-yard Link-Belt Dragline Shovel
Monterey Peninsula	80,000	135,000 cy	....	8′-10′	1′	clay	7	garbage none refuse 6″ per year	3	80	$24,259	none	2 DC 6 Caterpillars and 1 6-yard Bee Gee Carryall
Oakland	460,000	108,000 t	....	15′-18′	6″	earth	13	1′-3′	12	150	$1.25 per ton	none	Two D 7 Caterpillar Tractor Bulldozers
Ontario	45,000	....	ramp	6-10′	16″-24″	sandy soil	5	unknown	2	too new	....	....	1 D 7 Caterpillar Tractor and a Tractor-drawn Scraper.
Palm Springs	17,500	....	trench	15′	18″	sand	11	unknown	1	....	....	....	1 D 6 Caterpillar Tractor, Insley Dragline with ½-yard Bucket

City	People Served	Annual Volume t=tons cy=cubic yards	Type	Depth Refuse	Depth Cover	Cover Material	Years in Operation	Settlement	Crew Size	Annual Acre Feet	Annual Operating Cost	Evidence of Decomposition	Equipment Used
Palo Alto	60,000	12,000 t	area	8′	2′	clay	....	....	....	....	....	....	1 Allis-Chalmers Tractor-Dozer
Riverside	85,000	1,500 t	trench	4′	1′	sand	13	unknown	2	5	$39,000 total	none	2 D 7 Caterpillar Tractors and 1 8-10-yard Caterpillar Carryall
Santa Barbara	64,000	25,000 t	area	4′-6′	1′-2′	sand and clay	5	unknown	1	132	$19,200	none	1 D 6 Caterpillar Tractor, and 1 4-yard Caterpillar Crawler Drawn Scraper
San Diego	570 000	373,000 t	ramp	5′-80′	2½′	....	8	1′-3′ in 5 years	17	460	$.85 per ton	none	6 Crawler Dozers (1 AC HD 21 and 5 D 8's), 1 15-yard Carryall and 2 Rippers
Santa Cruz	30,000	215,000 cy	area and trench	80′	2′	ash, clay, chalkrock	40	unknown	2	....	$.65 per cy	....	1 D 6 Caterpillar Dozer, 1 4-yard Caterpillar Carryall
Santa Maria	20,000	13,000 t	ramp	16″	4″	sand	7	approx. 18″	1	51	$13,500	none	T D 14 International, Dozer and 8-yard Carryall
Stockton	89,000	300,000 cy	trench	18′	4′-6′	loam and clay	10	4′-6″ in 5 years	4	54	$.15 per cy	none	1 1-yard Link-Belt Dragline, 1 TD 14 and 1 TD 18 Internationals
Whittier	35,000	170,000 cy	cut and fill	5′	2′	clay	25	unknown	2	....	$.234 per cy	none	1 Water Truck, 1 D 9 Bulldozer, 1 D 8 Bulldozer, 1 12-yard Carryall, Caterpillar
Watsonville	13,700	35,680 cy	trench	20′	30″	sandy-clay	12	unknown	1	26.3	$.18 per cy	none	Link-Belt Dragline, ¼-yard Bucket, and 1 R 4 Caterpillar Dozer
COLORADO													
Boulder	40,000	1,300 cy	area	2′-3′	6″	clay	5	....	2	8	$2 per cy	....	1 TD 18 International with Dozer, 1 5-yard Scraper.
Sterling	13,500	3,759 cy	trench	18″	18″	sand	3	12″ in 3 years	2	....	....	....	1 D 6 Caterpillar Tractor
CONNECTICUT													
Westport	20,000	10,200 t	area	9′-10′	2′	gravel and top soil	3	unknown	1	43.5	$18,000	none	D 6 Caterpillar Bulldozer
DELAWARE													
Newark	10,000	1,200 cy	trench	2′	9″	clay	9 months	....	1	4-2/3	$.58 per cy	none	955 Caterpillar Loader with 1¼-yard Bucket
FLORIDA													
Dade City	4,700	1,500 t	ramp	2′	6″	sand	20	....	1	1	$6,000	none	International Crawler Tractor with Drott Shovel
Lake Worth	24,000	104,303 cy	trench	10′	3′	sand	15	12″ in 15 years	2	15	$.1083 per cy	none	D 6 Caterpillar Bulldozer
Quincy	10,000	30,000 cy	trench and area	4′-6′	2′	clay	2	6″ approx.	2	....	....	none	D 6 Caterpillar Dozer
Tallahassee	50,000	96,000 cy	trench	10′	8′	sand	2	....	2	6	$10,700	none	1 TD 15 International Bull Clam with 2¼-yard Bucket, 1 Chevrolet Pickup Truck
Two Rivers	14,000	19,000 cy	trench	6′-8′	2′	sand	5	....	1	12-16	$27,380	none	1 Crawler Tractor with 1½-yard Bucket
GEORGIA													
Albany	50,000	22,343 cy	ramp	14′-16′	2′	sand, clay	12	none	2	....	$11,830	minor	D 8 Caterpillar Bulldozer

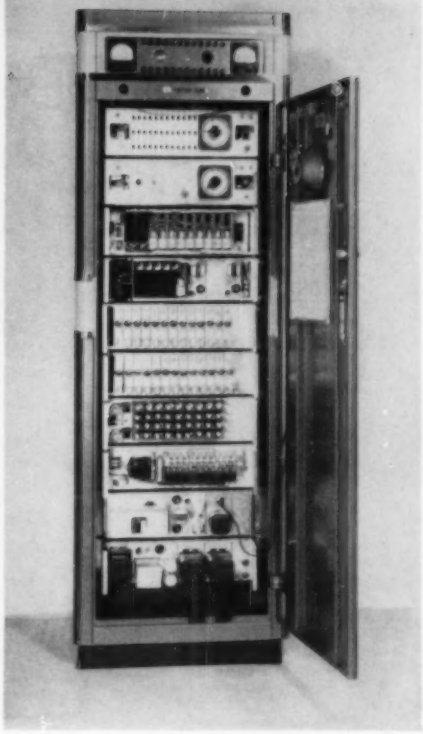
City	People Served	Annual Volume t=tons cy=cubic yards	Type	Depth Refuse	Depth Cover	Cover Material	Years in Operation	Settlement	Crew Size	Annual Acre Feet	Annual Operating cost	Evidence of Decomposition	Equipment Used
Augusta	100,000	323,440 cy	trench	8′	2′	loam	9	4″-5″ in 5 years	3	....	....	....	1 HD 10 Allis-Chalmers, D 7 Caterpillar Bulldozer, TD 18 International Tractor, 1½-yard Drott Clam
Waycross	22,000	....	trench	2′	1½′	sand	1	none	1	....	$5,800	none	955 Caterpillar Bulldozer
IDAHO													
Boise	80,000	24,000 cy	area*	8′	6″ daily	loam	4	....	22	....	$28,000	none	1 D 7 Caterpillar, 1 TD 18 International with Bull Clam
*Old gravel pit.													
ILLINOIS													
Champaign	50,000	112,320 t	trench	4′	18″	clay and top soil	10	1′	2	4	....	none	Caterpillar D 7 Dozer and #70 Scraper, Caterpillar 977 End-Loader
Winnetka	14,000	10,861 t	trench 2-stage lift	10′	2′	sand, clay	14	6″ 1st yr 6″ 8 yrs after	1	1	$1.11 per ton	very little	1 International TD 9, 1 Unit Power Shovel-Dragline, ½-yard; 1-yard Bull Clam, 1 Jaeger 2P Centrifugal Water Pump, 2″
INDIANA													
Anderson	60,000	300 t	area	15′-20′	2′	clay	2½	approx 1′ in 2 yrs	2	....	....	none	TD 14 International with Drott 4-in-1 Bucket, TD 18 International Dozer, 8-yard International Pan
Bedford	12,500	14,400 cy	trench	10′	2½′	loam	6	4″	1	....	....	none	Caterpillar D 7 Dozer
Fort Wayne	160,000	....	trench	10′	2′	loam	8	....	4	....	....	none	Crane, 3 Dozers, 1 Dump Truck
West Lafayette	20,000	25,000 cy	area	....	....	sand	6	24″ in 6 years	2	....	$.39 per cy	none	1 Caterpillar D 4 Tractor with Front End Loader having a 1-yard Bucket
IOWA													
Iowa City	33,443	25,300 t	ramp and trench	20′	2′-3′	clay and sand	7½	none	3	40	$.76 per ton	none	1 Allis-Chalmers HD 6G Tractor with 1½-yard Bucket
KANSAS													
Manhattan	22,500	....	trench	6′	2′	sand and loam	7	....	1	....	....	none	1 HD 6G Allis-Chalmers Front End Loader with 1½-yard Bucket
Hutchinson	40,000	75,000 cy	ramp and trench	6′	1′	loam and clay	14	....	1	46	$.12 per cy	none	Allis-Chalmers HD 6G 1½-yard Bucket with Ripper Attachment and 2-yard Scoop
MARYLAND													
Annapolis	30,000	10,000 t	trench	1′-2′	18″-24″	sand, clay and loam	10	....	7	80	$1.00 per ton	none	1 D 7 Caterpillar Tractor Bulldozer, with #70 Pan, 1 Allis-Chalmers HD 16 Bulldozer with 3-yard Bucket
MASSACHUSETTS													
Arlington	50,000	130,000 cy	trench	26′	2′	sand and loam	8 mo.	24″	2	....	....	yes	22 B Bucyrus-Erie Crane with ¾-yard Clamshell and 1-yard Front End Loader, Allis-Chalmers HD 9
MAINE													
Augusta	22,000	25,000 cy	trench and ramp	5′	1′	sand and loam	10	....	2	6	$7,000	none	1 D6 Caterpillar Bulldozer, ½-yard Backhoe, Lorain

(This table will be continued in the March issue)



These master dials control the transmission of synchronizing pulses.

These are the tone generating devices of the coder which, with the programmer, creates the function tone signals.



Pre-Programming 50,000 Traffic Signals

New York has first punched-card traffic control

By **T. T. WILEY**
Traffic Commissioner

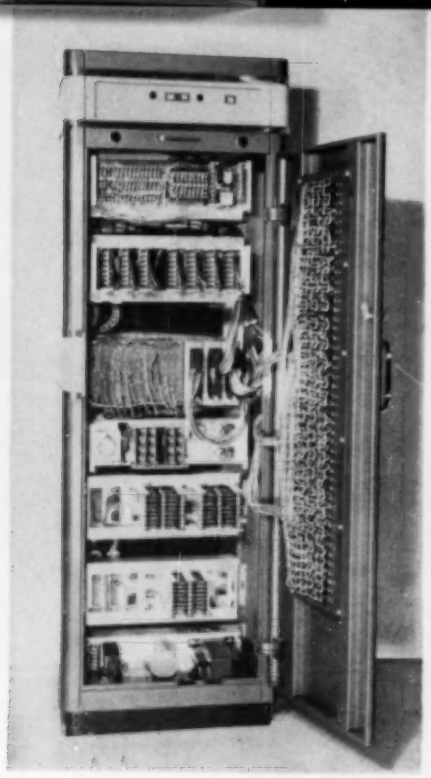
Electronic control of New York's traffic signals by a radio communications system will reduce traffic delays by providing centralized signal control.

Changes in signal timing at the vast majority of the city's 50,000 traffic signals are presently made by individual adjustments at each control box thereby making programmed or emergency changes impractical. Signal interconnections, to permit timing schedule maintenance and synchronization of staggered light systems, are made by laying cable between each signal. This is an expensive method and causes disruption of traffic while excavating the cable trench. The cost of installing the present system is $50,000 per mile.

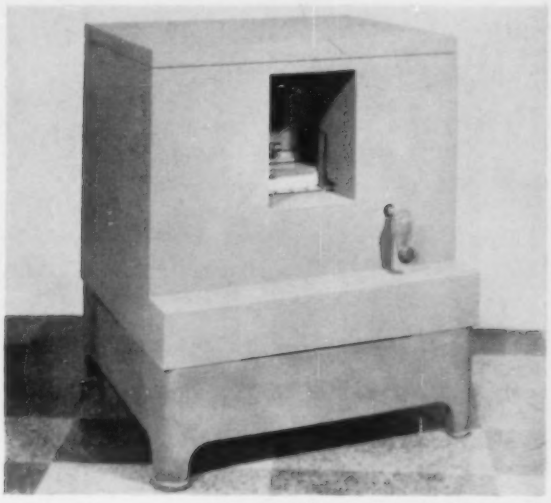
The radio system will reduce this figure to $15,000 per mile in addition to making it unnecessary to dig up the streets.

The radio control system will per-

Mayor Robert F. Wagner and the author flip on the system.



The programmer selects the dials and offsets for the specific intersection.



The card reader directs the actual traffic signals.

mit broader application of progressive signal timing and enable signals to be changed from a central location without sending personnel to the site. It will also permit us to expedite rush-hour traffic by favoring inbound in the morning and outbound in the evening as well as making parallel routes available in case of traffic tieups.

Under the new system, the Central Controller can put 18 different types of programs or schedules into effect, each within an interval of not more than 12 seconds, by means of a punched-card reading device. This is the first such punched-card control system.

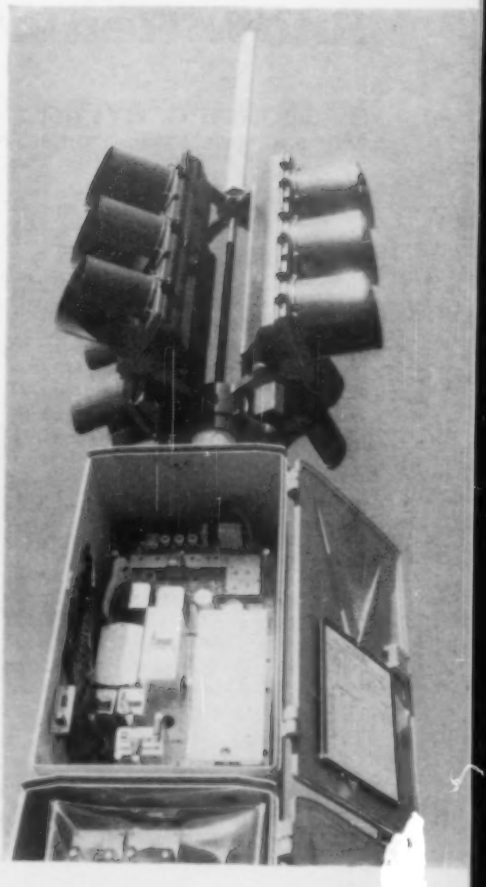
The cards, representing a "program" for a particular street system, are fed into equipment which translates the pattern of perforations into coded electronic impulses. Routed by telephone cable to an unattended FM radio transmitter on the roof of the Queens General Hospital, the impulses are broadcast as ultra-high-frequency signals. At a street intersection the receiver-decoder, mounted on the signal pole, controls the traffic light according to the instructions received for the particular location.

Each card in a "program" controls one or more traffic signals. Punching on the cards represents both the location of the signal and the predetermined instructions for the functioning of the light.

A system of lights may have several "programs" keyed to changes in traffic-flow characteristics at different hours of the day. Thus, heavy inbound traffic may be favored in the morning and heavy outbound in the evening. Changes in the character of flow—during the daytime north-south and after 7 p.m., east-west—can also be accommodated.

A transmitter station in each borough will receive messages from the Master Controller to be located at Traffic Department Headquarters, 100 Gold St., Manhattan. The first transmitting station has been established at Queens General Hospital. Electronic equipment installed at 100 Gold Street can control 1,000 separate locations.

The radio control system was built by Motorola Communications and Electronics, Inc., Chicago, Ill., according to Traffic Department specifications at a cost of $125,699. ◄◄



This control box, located at an intersection in New York City, is part of the control system.

The advance preparation, the actual work, the spring clean up and the equipment maintenance makes . . .

Snow Removal a Year-Round Project

By **GEORGE G. HYLAND**, Maintenance Engineer
Massachusetts Turnpike Authority

The 123.2-mile Massachusetts Turnpike serves as a "Main Street" between Boston and New York and a readily accessible link between other large cities in the area. Its accessibility to other super-highways places a heavy vacation load on its bituminous concrete lanes. The result: a nearly constant pressure of truck, bus and passenger-car traffic the year round in all kinds of weather. This "normal" pressure increases during winter because of the Turnpike's enviable reputation for efficient snow removal during some of New England's worst recent storms. When bad storms choke other roads, many people who normally would not use our road flock to get on. Maintenance therefore becomes mainly a problem of snow removal but most time is spent not in plowing but in getting ready to do the job effectively.

We can have freezing rain at the easterly end, wet, heavy snow in the central part and rapid drifting at the westerly end, all at the same time, so we must be ready for whatever comes. To handle such a variety of conditions effectively, decentralized operating teams working out of six maintenance depots, placed at strategic points along the turnpike's length, carry out snow-removal work.

Area Supervisor

An area supervisor, responsible for two depots or sections, heads up snow-removal work in each area. Each section in turn is headed by a foreman and an assistant foreman. To insure an efficient job, authority is delegated as shown by the following excerpt from the *Winter Maintenance Manual*:

"If an emergency arises and a supervisory official is not on hand to discuss a particular matter, you (foreman or assistant foreman) have full authority to make your own decision without fear of criticism from any supervisor."

The object is to keep ahead of the storm and keep the turnpike open for safe passage of vehicles at all times. To accomplish this the Authority employs a massive array of men and machines and obtains meteorological forecasts by Weather Service, Inc. of Boston.

More than 120 men are assigned to the turnpike's maintenance operations and most play at least some part in snow-removal work. We can supplement this crew with more men and equipment under contract arrangements should the need for them arise.

Our basic fighting equipment consists of 19 Walter Snow Fighters, eight Austin-Western power graders, 18 five-ton Mack trucks, six 1½-ton Ford trucks and 15 front-end loaders (13 Michigans and two Jaegers). This equipment is distributed among the six depots according to the pattern of need that has developed during the turnpike's 3½-year history.

The graders are six-wheel drive and steer machines equipped with two-way front-end plows, center scrapers and wing plows. Two of the Walters are equipped with Sicard snow blowers and the other 17 have

Twenty-five ramps, such as the one shown here, expedite loading at maintenance depots and sand stockpiles.

Sweeping is also an important part of the program.

wing plows in addition to the normal under-body blades. The Macks have replaceable Baughman sander bodies and the Fords have Fox sander body inserts which fit into the normal dump body to permit spreading sand and salt on the road. The Ford trucks carry front-end plows and all are of the dump-body type. The Macks comprise six rack bodies and 12 dumps.

The front-end loaders load sand and salt into the trucks and sander bodies. To ease loading and avoid possible damage to the sander bodies, the maintenance department devised special low-cost loading ramps. Each consists of a three-sided corrugated steel box filled with dirt and gravel. We paved all the loading ramps with bituminous concrete in order to reduce maintenance to a minimum.

We have 25 such ramps, one at each depot and also at the 19 stockpiles located at strategic points along the entire length of the highway. Aided by these ramps, a loader can fill a sander body in three to five minutes.

Cranes

The equipment pool also includes two Austin-Western seven-ton-capacity hydraulic cranes. These we use on the turnpike for lifting and positioning work and to change the truck bodies and install and remove the sander inserts. Special features such as speeds up to 25 mph, four-wheel drive, steering and braking, and the ability to turn the telescoping booms continuously through 360° give them the versatility needed for year-round turnpike work.

Normally the plows operate in tandem teams, each team consisting of a forward unit and a rear unit. A unit in a tandem team consists of three plows for three-lane sections and four plows for four-lane sections. Plowing routes average ten miles in length. All plows must scrape to the pavement and plow as wide as possible. However, we feel it is better to keep 18 feet open at all times rather than risk closing any section of the turnpike in an effort to plow the entire width.

Basic methods observed in removing snow and ice are:

- **plowing is always done in the direction of traffic.**
- **unless otherwise ordered by the foreman, the first plow tandem operates along the left edge of the passing lane. If there is enough space in the middle strip to store the snow, the snow is plowed to the left. The pass-**

Double flashers mounted on this outrigger assembly warn motorists during snow-clearing operations.

In spring, sander-body inserts are removed from the 1½-ton trucks and the larger-capacity sander bodies are replaced with regular dump bodies.

ing-lane plow carries a large sign reading "Pass" and a right-hand arrow prominently displayed on the rear of the truck.

• The second plow tandem in line follows the first as closely as safety permits, and plows the snow to the right. This plow tandem also carries a prominently displayed "Pass" sign.

• The third and fourth plows of the complete plowing team start plowing at least 700 feet behind the second plow tandem, where the second plow leaves off, and plows the snow to the shoulder on the right. Each truck uses its wing, if it has one. These trucks also carry "Pass" signs, with left-hand arrows.

Snow is winged back so that the shoulders are cleared of snow as soon as possible. The graders do this winging back, either as part of the rear tandem units or as follow-up machines.

Their 13-foot wings put snow well back from the pavement. In emergencies they can be used successfully alone, unaided by other equipment, and with combined use of the wing and front plow, they can open a 16-foot-wide path.

During all plowing operations, day or night, each plowing unit must keep its radial warning light and rear lights flashing at all times. Our maintenance department mechanics have devised a steel extension arm that holds a set of twin flashers eight feet out from the grader chassis on the wing side of the grader. This safety device warns motorists that the wing blade is in use as a plow. When not in use, the extension arm folds to an upright position.

Constant Alert

When winter approaches, patrols begin to watch road conditions around the clock, covering each section at least once every two hours. Normally, pick-up trucks do the patrolling, but when slippery conditions exist a sander takes over the job.

For ice control we generally use a mixture of 100 pounds of salt to a ton of sand and straight salt applied at the rate of 500 pounds per mile. This improves traction and helps keep snow in a "mealy" condition making it less likely to pack and harden and easier to plow. We are also experimenting with a calcium-sodium-chloride mix.

Control is maintained by two-way radios with a central communications center near the midpoint of the turnpike. All maintenance depots are connected by two microwave telephone systems, one for administrative use, the other for maintenance operations.

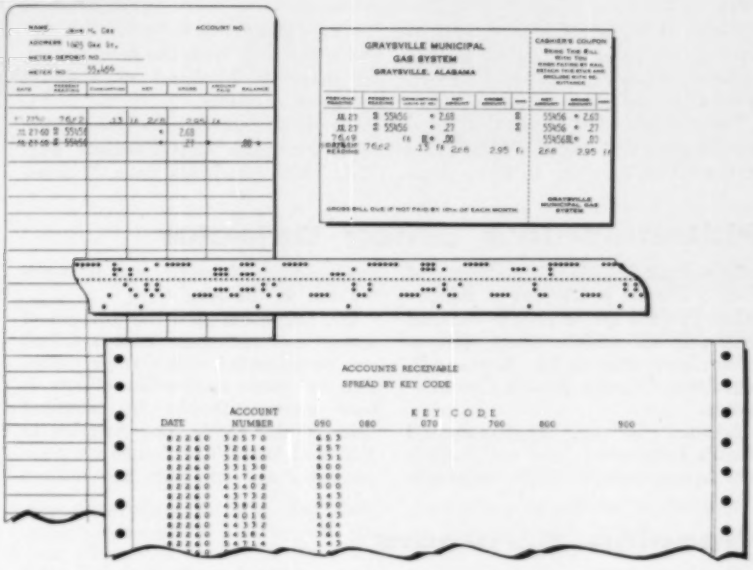
Three times a day Weather Service sends regular teletype forecasts to the central maintenance office and to the communications center, plus additional forecasts when a change in weather is expected. This information is relayed to all sections and personnel affected.

The work does not end in spring, for all equipment must be inspected, repaired if necessary, or replaced. Spare parts, equipment and supplies are inventoried and new orders placed. Also, the regular dump bodies are again put on the trucks having sander units.

Street Sweeping

Street sweeping also enters the picture. In spring, as well as during fair weather breaks, six Austin-Western sweepers remove salt and sand from the roadway and interchanges. The graders dress up shoulders damaged during the winter, clear ditches to improve drainage and assist in occasional construction projects. By the time the grass starts to turn green, most of the ravages of winter have been healed. The biggest job then is keeping the grass cut and traffic markers painted on the pavement. Summer does provide a slight respite from snow and ice control activities — but even then some thought is given to winter problems and ways of overcoming them. ◄◄

Miss Violet McCutchen, cashier, posts a miscellaneous city receipts transaction to the ledger card for that account. Information is automatically punched into the tape; when the tape is processed, the city receives a detailed journal of miscellaneous income. The tape recorder is in the space under the posting machine.



The customer's ledger card and post-card bill are posted simultaneously; the detailed journal of the machine captures a duplicate record of the transaction. The date, key code, customer number and route, net amount, and amount of discount are punched into tape (center) which is processed to produce accounts-receivable distribution and an analysis of miscellaneous income shown at the bottom.

City Posts Payments and Buys Tape Analysis

By **MAURICE G. WEST**, Mayor
Graysville, Alabama

Maurice G. West

The City of Graysville, Ala., population 2,750, has installed a system for control of utility and tax payments designed around a National "window" posting machine equipped with a punched paper tape recorder. Figures entered into the keyboard of the machine are accumulated into control totals and simultaneously punched in code in a strip of paper tape. The tape is processed once a month by a local data-processing bureau, which furnishes us with a proof list, a breakdown of city receipts by account number, and a complete distribution of our accounts-receivable income.

The results have been so good that we recommend our system to other municipalities. Capturing data for analysis in punched tape as a by-product of making the original entry saves space, eliminates the need for investing in processing equipment and specialized business-machine personnel. The technique gives the city all the necessary reports at about $160 a month—far less than we would have to spend if we produced the reports by pen-and-ink.

The Window Machine

The city operates three different utility systems:

(1) The mayor and city council operate the gas system.

(2) The water works contracts with the city.

(3) The Gas Board is a legal entity

that arose when the original gas system established in 1950 was extended. The legal requirements of a new bond issue made a separate record-keeping arrangement necessary.

The revenue from all three systems is controlled through the 20-total window machine. The machine classifies income, special charges, and so on, validates post-card bills, and posts the customer's ledger card. The machine is wired to send signals to the tape recorder automatically; the cashier does not have to make extra entries on the keyboard.

The city has 5,200 accounts divided into 19 controls. About 400 accounts is the ideal number to have in a control group, but of course we have fewer than that number in many controls. Dividing the accounts in this way organizes the meter-reading job and at the same time gives us a convenient and practical way to maintain control over the city's accounts receivable.

Under our previous system we used a single accounts-receivable control figure for the entire list of accounts. If we were out of balance, we were compelled to search through the entire list. With the new system, an error is localized to a small group of accounts.

Miscellaneous city income is entered through a "miscellaneous" key. This income includes fines, licenses, taxes, and park-recreation receipts. A detailed ledger card is posted when the transaction takes place, and the information is punched into tape. The city sends the punched paper tape to the data-processing center twice a month. The tape is converted to punched cards and the cards are sorted and listed on automatic equipment. We usually receive complete reports from the center within three working days after the end of the month.

The fee charged by the center depends on the volume of punched cards run from the tape and the detail desired in the reports. We usually require about 5,000 cards for all our transactions. ◄◄

Philadelphia's Smog Detector

The Philadelphia Department of Public Health is keeping a watchful eye on the air its people breathe, with a device called a Spectrophotometer, according to Dr. Norman R. Ingraham, Deputy Health Commissioner.

Located in the Environmental Health Laboratory, the unit, which cost approximately $750, measures the amount of ozone and nitrogen dioxide in the air.

Dr. Ingraham said the amount of ozone and nitrogen dioxide which can be tolerated without eye irritation or other noticeable effects is now known, thanks to sampling tests of the air in Los Angeles in 1953 and 1954. The dangerous concentrates are one part per million for ozone and 10 ppm of ozone and .04 ppm of nitrogen dioxide, both well below the danger zones. The Spectrophotometer can help predict smog formations and thus prevent public alarm, Dr. Ingraham said. The device is currently being used also to measure samples of lead in suspected lead poisoning cases, he declared. ◄◄

Planning Seminars

Members of town, village and city councils in upstate New York areas are getting some practical instruction in urban planning through seminars conducted by Sargent-Webster-Crenshaw & Folley, Syracuse, N. Y., architects and city planners.

Subjects for study cover zoning performance standards; how to develop a capital budget; population growth effects; land uses and regional planning. Run at nominal cost, the informal sessions are held monthly during the evening so that local government officials or interested citizens can easily attend. The sessions include a guest speaker—an expert on the topic under discussion.

Dr. Hollister Kent, director of the consultant's city and regional planning division, expects the seminars to remove uncertainty about these activities. Planning will never be more than a mysterious catch-all to most people, he feels, unless planners make an earnest effort to help local government officials understand what planning is and what it cannot do.

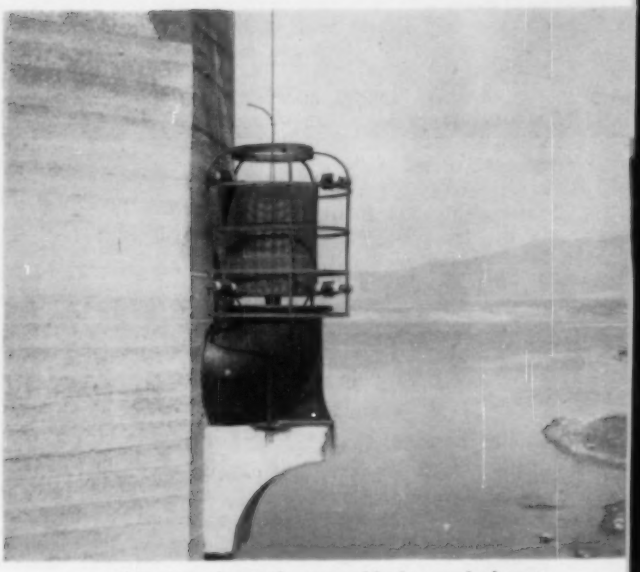
The discussions uncover sensitive facets of planning and zoning. For example, at the seminar in Clay, N. Y., Professor Robert M. Anderson of Syracuse University's School of Law pointed out that the powers of a zoning board are limited. It doesn't have jurisdictional authority to give an owner of a multiple dwelling in one area of a town the privilege of building another multiple dwelling in another sector if the board's rules forbid such dwellings in the latter sector. A zoning board cannot move one inch beyond its own rules. If it requires a ten-day limitation on the issuance of building permits and a permit is offered on the 11th day, the board can deny it. Rules may confine a board's actions but, at the same time, they place it in the position of always knowing where to stand on each and every case.

The same seminar answered the question, "Why is a zoning board necessary?" Without one, explained Zoning Board Chairman Fred Merrill, you are less likely to obtain a solid interpretation of your zoning acts. And, if an issue ever reaches a regular court, that court will have a record of the issues, taken at the time of the hearing or appeal, which is much better to refer to than, for example, the opinion of a building inspector. ◄◄

Town officials of Clay, N. Y., gather to learn practical facts about planning and zoning from experts in the field.

San Diego's six terminal reservoirs are equipped with outlet screens to . . .

Keep Out Fish Electrically



This view shows the assembly lowered almost into position over a reservoir outlet.

By **R. E. DODSON***

A pulsating direct current guards the outlets of our terminal reservoirs and bars the entry of intruders. In this case the culprits are fish and by keeping them away from the outlets we have better appearance, odor control and equipment maintenance, both on the outlet towers and at the filter plants. Electric fish screens, designed and patented by H. T. Burkey, president of the Electric Fish Screen Company of Hollywood, Calif., send out the pulsating current.

The principle of fish manipulation by electricity is not new but most of the work in this field has been done either to afford quick and easy sampling for fish population studies or to kill or trap unwanted species of fish.

However, as early as 1917 Mr. Burkey saw the need in western irrigation and power canals to keep game fish from entering the canals without harming the fish.

An electrical field in water produces an effect upon fish that may vary from virtually nothing in the case of low-voltage direct current, to instant death in the case of 110-volt alternating current. The character of the current pulses, the size and placement of electrodes, the temperature and conductivity of the water, the size and species of fish, all have a marked influence on the effects. Experience shows that a high-voltage pulsating direct current field is most effective when one wishes only to "steer" fish away from a given place in fresh water such as a reservoir. There is some evidence that with proper controls, pulsating alternating current may be equally effective.

Operation

Picture a fish idly swimming toward a reservoir outlet around which a pulsating current field has been created. As the fish's head enters the faint outer reaches of the electrical field, his nervous system receives a stimulus which causes his body to turn away from the field and, at the same time, to commence swimming with a more rapid but involuntary forward motion. This immediately brings his body sideways to the outlet. His involuntary forward motion sends him on past the outlet. Assuming that there is nothing to entice him back toward the outlet, he will continue to swim away from it. The electrical field is most effective on large fish, and higher voltages are required to affect smaller fish. The effectiveness evidently is proportional to the voltage drop through the length or breadth of the fish's body.

Applying this phenomenon to a multi-port outlet required considerable experimentation. As now evolved, a steel pipe frame is attached by porcelain insulators to the cylindrical wire screen on each outlet and is raised and lowered with it. Steel straps mounted horizontally around the pipe frame augment the negative electrode assembly. The pipe and straps are spaced about 14 inches from the outside of the outlet screen and about 16 inches apart. The outlet screen forms the positive electrode, and the system is connected to an impulse generator on the operating deck of the outlet tower by a waterproof cable.

The rectifier and impulse generator have undergone many improvements through the years. The latest model used in San Diego's system consists of a mercury-vapor rectifier and a condenser using an Ignitron 5550 or a KU676 power tube for discharge. Discharge varies from 25 to 75 microfarads depending on the age and size of installation. Input is 110-volt 60-cycle alternating current; output is pulsating direct current at 500 to 900 volts, set according to the electrode spacing and the conductivity of the water. The current pulse is 15 to 20 amperes and the impulses are regulated to a frequency of two

* Mr. Dodson is Assistant Director of Utilities for the San Diego, Calif., Utilities Department.

or three per second, with each impulse lasting for about ten microseconds.

It is important to maintain the widest posible field (hence the high voltages), to effectively turn away all sizes of fish before their normal locomotion carries them between the outer electrodes. If they should pass to the inner side of the invisible "electric fence," they would be involuntarily driven to the outlet screen (the positive electrode) and would be either stunned or killed. In any case they could not escape, and would eventually go through the outlet.

Initial Installation

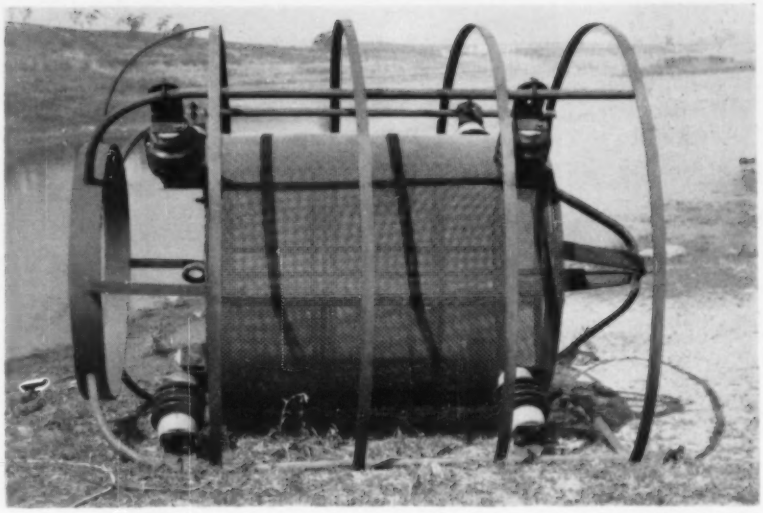
Most of our reservoir outlet works consist of multiple-outlet towers equipped with 30-inch saucer valves vertically spaced at 15- to 30-foot intervals. Open outlets are fitted with cylindrical screens four feet high and four feet in diameter, made of galvanized wire mesh with openings three to the inch. The normal approach velocities are low enough so that all but the smallest fish are able to swim away. However, the small fry may be drawn through the screen, and ailing larger fish are drawn against the screen where they die and disintegrate. Smaller-mesh screens merely result in rapid clogging with algae.

The end result is a familiar one to many surface water supplies—small live fish and larger decomposed ones going down the line, and outlet screens frequently clogged with the remains.

The filter plants will remove the fish before distribution, but there is the likelihood of poor appearance, odor, mess and clogged equipment. Unfiltered supplies will deliver the fish directly to the customers, with the attendant bad publicity and poor consumer relations.

San Diego has practiced filtration of its surface water supplies since 1906, so in the long run the fish problem has not been of great importance except for the mess of having fish on the filters. Also the reservoir waters always have been of relatively high quality since no sewage or industrial wastes are discharged on any of the watersheds. The removal of plankton and the destruction of tastes and odors are the principal reasons for the city's long-time policy of filtration.

Because of the sudden and tremendous growth of San Diego during World War II, the demand for water out-ran the total capacity of the filter plants. With neither time, money nor materials available to provide additional plant capacity, it became necessary to supply up to 50% of the demand with chlorinated but unfiltered reservoir water. The city felt that tastes and odors could be fairly well controlled by the careful use of copper sulphate and chlorine but there was no way to explain the presence of fish in the system. Thus, the utility decided to try electrical repulsion to keep fish out of the system.



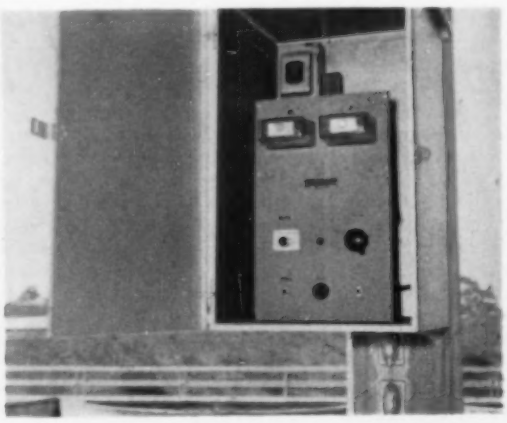
The electric fish screen consists of an outlet screen, forming the positive electrode, insulated from and surrounded by a metal "cage" serving as the negative electrode.

Immediate Results

The utility installed Burkey's electric fish screens on the outlets of one reservoir in 1943 with immediate and quite apparent results. While the units worked, no fish were found in the outflow, nor on the screens.

Electric screens were then provided for the rest of the terminal reservoirs. When 100% filtration was resumed in 1950, we continued operation of the electric screens because of the better appearance, odor and equipment maintenance on the outlet towers and at the filter plants.

Electricians of the Utilities Department's Testing and Control Division maintain the six electric fish-screen stations. Repair and replacement parts average $3 per month, repairs and adjustment labor costs are about $25 per month and power costs are about $10 a month for each station. The impulse generators cost about $2,500 each and each electrode frame with its connecting cable runs about $100. The basic units have a life of at least 20 years. The replaceable electronic tubes last about two years. ◄◄



Mounted on the operating end of the outlet towers, the control box contains a rectifier and impulse generator.

How Cities Can Compete Successfully

A new survey technique analyzes the aspects of a city from a broad basis, showing how it can become a more powerful influence in a growing metropolitan area

By **PROF. ERNEST M. GAJARY KUHINKA** and **PROF. HAL M. WELLS**
Behavioral Science Research Laboratory Dickinson College, Carlisle, Pa.

As the spaces between cities grow smaller and travel between cities more easy, municipalities that once were independent and self-contained now have to compete in order to stay alive and economically prosperous.

In the past few years, as the tempo of this competition grew, the Standard Market Survey became a tool enabling cities to analyze economic factors involved in an urban center and its surrounding area and to help locate potential markets. This method of survey, however, has a major weakness. It does not pin-point the exact areas of conflicting growth between cities. The principal reason is that it assumes that the *economic* factors are the only ones that play a part in the economic growth of a city. There are at least two other sets of factors: the *social* and *cultural*. Therefore, to pin-point accurately the areas of real competition between cities, all three factors must be analyzed.

We have demonstrated the value of such an approach in Carlisle, Pa. A Standard Market Survey was conducted there in 1958. Later, in cooperation with the Behavioral Sciences Laboratory of Dickinson College, we made an analysis using economic, social and cultural factors as a basis. Interviews were conducted within a 16-mile radius with the city square of Carlisle as a hub.

The area contains 16 towns, townships and boroughs. Interviews were conducted with families throughout the entire area in an attempt to determine their economic, social and cultural orientation to Carlisle. We divided the three general factors into more than 30 categories, as follows:

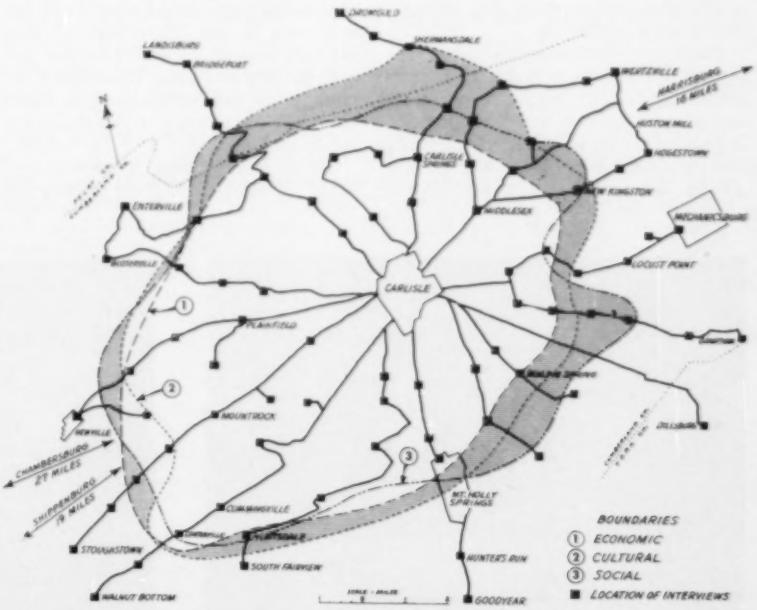
1. **Economic**
   Retail (food, general merchandise, household equipment, hardware, transportation, construction, real estate, occupations, etc.)
2. **Cultural**
   Recreation, communications, education, holidays, etc.
3. **Social**
   Health, safety, service organizations, legal aid, etc.

In measuring the strength of these three functions, we made one important hypothesis: If the economic, social and cultural functions of a city extend beyond its legal boundary, then the strength of the functions decrease, in direct proportion, from the center of the city to the breaking point. The breaking point is where the function ceases to exist.

This enabled us to determine the breaking points of all three major functions. We diagrammed them on three separate maps and then superimposed them on a single master map.

The map shows that the economic area of influence is the smallest, the social area is the next in size and the cultural area of influence is the largest. The strongest cultural communication between Carlisle and its surrounding territory is obtained through the standard communication media of newspaper and radio.

The businessmen of Carlisle have a potential market in an area not



The shaded belt in the map shows the potential area of economic expansion, where cultural and social influence have outreached the economic. It also shows the competitive pressure of Harrisburg to the northeast.

previously considered theirs and the most effective means for reaching this area is through the newspaper and radio. This area of potential economic growth is essentially rural, so advertising should be slanted to reach this particular market. Our survey showed that several nearby cities—Shippensburg, Chambersburg, and Harrisburg have much greater economic, social and cultural spheres of influence. They therefore pose a threat to Carlisle. When people have established a habit of going to a certain city for whatever reason, it is difficult to persuade them to change.

Our survey shows that Carlisle has a basically rural orientation with a strong possibility of growing economically in a northeastern direction. On the other hand, the three areas of Harrisburg, Shippensburg, and Chambersburg are constantly making inroads socially and culturally into the Carlisle area. If this type of growth continues, then economic invasion of Carlisle territory will surely take place. The businessmen of Carlisle can no longer think in terms of economic influence alone.

Analysis of social and cultural influences presents an important danger. Too many cities equate historical awareness with these influences. A city may have a magnificent historical tradition based on events that happened years ago, but if it is now socially and culturally dormant it will surely perish in time as an active economic center. A city today must expand both socially and culturally and not be satisfied to be merely historical.

Today cities are in active competition for in-between markets and old concepts will no longer work. Use of the three large factors in city competition gives a municipality an opportunity to analyze its place by using a method that is relatively inexpensive and fairly quick.

Only when the economic, social and cultural forces of a city move consistently together will the city have the upper hand in the growing metropolitan competition. ◄◄

Electrical Voting Speeds Council Meeting

The Newport Beach City Council recently adopted three new measures that reduce time required for council meetings.

First, they dispensed with the traditional "second to the motion" when they discovered that California laws did not require it. Now, any councilman can propose a measure without getting another member's permission.

Second, they now use an electrical voting system, eliminating the tedious and time-consuming voice vote. The city electrician, with help from the mayor (a registered engineer), designed circuits for the system and craftsmen from several city departments constructed it.

Each councilman indicates his vote simply by setting a toggle switch in either the *Yes* or *No* position. When the mayor throws a master switch, an audience view panel on the wall above and behind the councilmen shows the vote of each by illuminated red or green lights. Simultaneously, the vote is registered on a small panel at the city clerk's desk, enabling her to announce and record the results.

This procedure is not only a time-saver, but eliminates some awkward situations for councilmen. There is no question about the order in which the members vote. Simultaneous voting means there is virtually no opportunity to influence or be influenced by the vote of another councilman. The audience and press, of course, appreciate the clarity and promptness of the system.

A third aid is a generous supply of carefully prepared agenda at the entrance to the Chambers so that all members of the audience can follow the proceedings. This allows the council to act upon routine items merely by reference to their number on the agenda.

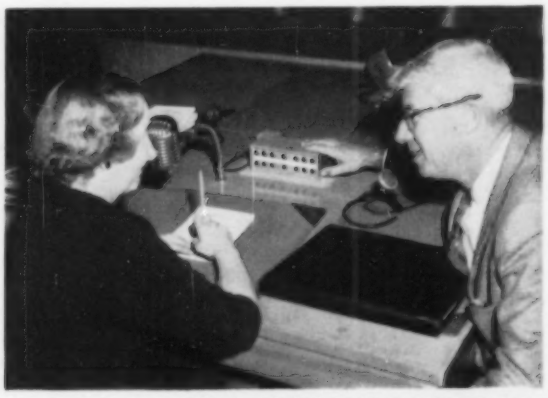
To further separate the wheat and chaff of council business, Newport Beach has adopted a regular pattern of formal and informal meetings. Twice monthly, regular evening council meetings are preceded by afternoon, public "study sessions" devoted mainly to questions and answers about upcoming agenda items and current city operations.

Once each month, the council holds an evening "policy discussion session." While open to the public, these meetings are designed primarily for councilmen to "think out loud" together about major needs and opportunities facing the city. The emphasis is on debate and discussion, while action and legislation are reserved for the regular meetings.

Newport Beach will gladly supply wiring diagrams of the voting system to interested city officials who wish them.

ROBERT SHELTON
City Manager
Newport Beach, Calif.

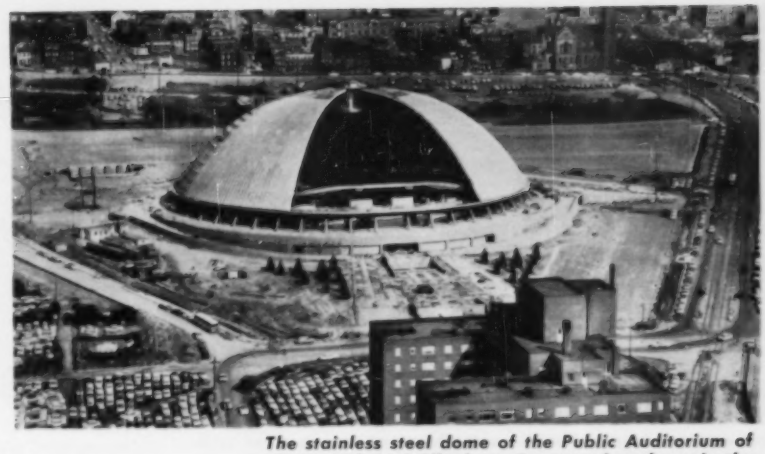
The audience can see quickly the results of the vote on any measure.



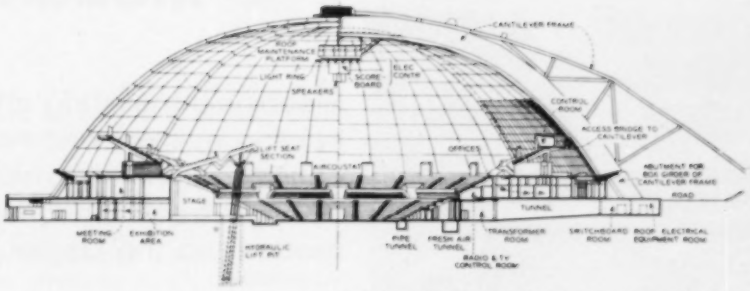
The city clerk has this small convenient register to note the results.

Biggest Dome In the World

. . . and one of the most unusual will house the Pittsburgh Municipal Auditorium



The stainless steel dome of the Public Auditorium of Pittsburgh and Allegheny County takes shape in the formerly blighted "Lower Hill" downtown area.



The new auditorium is being built to this general plan.

Metropolitan Pittsburgh is building a spectacular auditorium, part of a cultural center being constructed in the redevelopment of 95 acres of Pittsburgh's Lower Hill area.

Cost of the auditorium, $20,000,000, is financed by a combination of private and public funds including outright grants from the City of Pittsburgh and the County of Allegheny, gifts secured from a general fund-raising campaign, a gift of $1,000,000 from the Edgar J. Kaufman Charitable Trust, and a bond issue to be sold by the Public Auditorium Authority.

Construction of the auditorium is the direct responsibility of the Public Auditorium Authority of Pittsburgh and Allegheny County, using land which it has leased from the Urban Redevelopment Authority.

Pennsylvania law prohibits the placing of construction responsibility in the hands of one general contractor; at least four separate contracts must be awarded. The Auditorium Authority found it necessary to award eight.

The auditorium has three working floors in addition to the concrete stands. The public may enter at grade both to the first and second levels, which have a 16-foot difference in elevation. The designers accomplished this by taking advantage of the natural slope of the site.

The auditorium arena is a multi-purpose structure to accommodate the civic light opera in summer; basketball, hockey, boxing, wrestling and other entertainment events during the rest of the year, and trade shows, conventions and expositions throughout the year. It is being housed under the biggest dome in the world, 413 feet across. This dome has no interior supports. Its leaves travel on rails laid on a reinforced concrete ring girder. The apex of the leaves are supported by a pivot section at the end of the steel-frame cantilever arm.

A roof-maintenance platform is located directly beneath the top of the dome. It is reached by ladder from the cantilever. The platform supports winches which will raise and lower boxing-ring lights, a scoreboard, and speakers for the public address system.

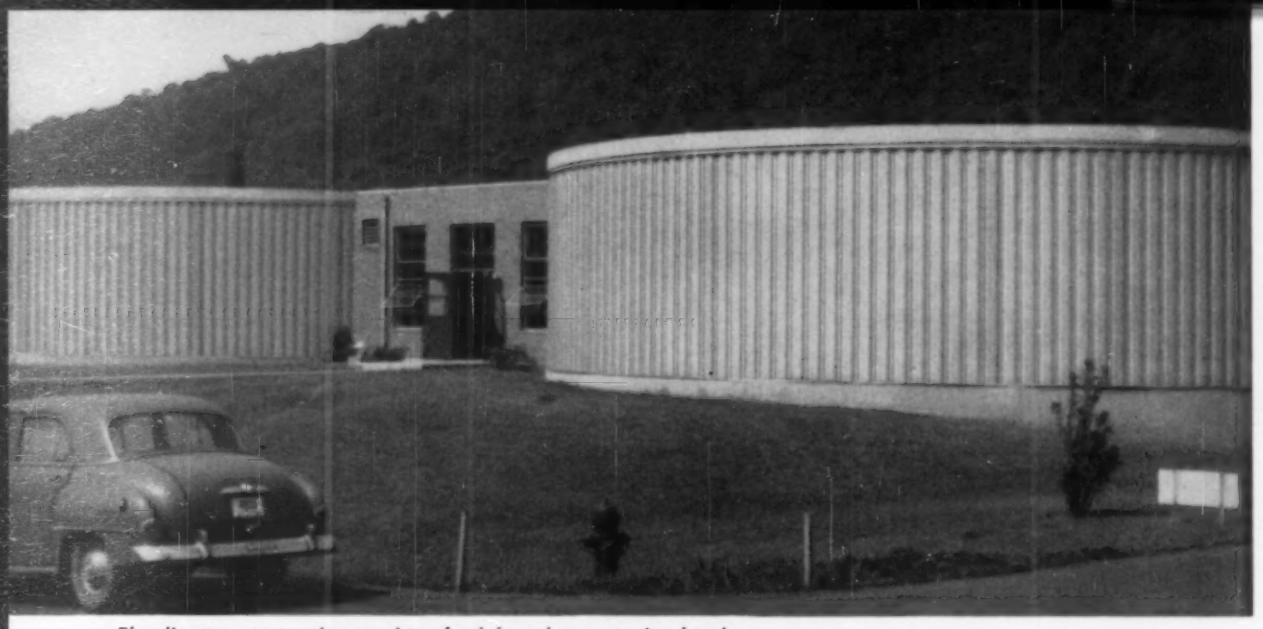
Seating facilities provide maximum capacity of 13,600, making it one of the largest auditorium capacities in the U. S. It will seat 10,700 for hockey matches; 12,130 for basketball; 13,600 for boxing; 10,000 for ice shows; 7,200 for theatrical performances. A total of 9,280 seats will be permanent, theatre-type upholstered.

How the Roof Operates

The unusual feature of the auditorium is its vast stainless steel retractable roof, supported by a huge steel cantilever. The roof is divided radially into eight leaves, two of which are stationary, six of which move about pins at the top as they roll along curved rails at the base.

The dome is constructed to open or close in 2½ minutes. It is nearly circular in plan, 415 feet in diameter and, at center, 136 feet high (as tall as a 12-story building).

Although the dome is divided radially into eight sections, the six movable leaves differ slightly in size so that they may be nested. Sheets of 20- and 22-gauge stainless steel have been fabricated into trapezoidal shapes to form the sheath for the roof leaves. Approximately 200,000 square feet of stainless steel (about four and one-half acres) will cover the eight leaves of the dome when completed. Some 7,800 separate pieces of stainless steel, weighing in all, between 180 and 190 tons, are being affixed to the dome in varying sizes. ◄◄



The digester construction consists of reinforced concrete insulated on the outside with two-inch-thick Foamglas covered with Stran-Steel pre-engineered steel-panel exterior walls.

All treatment plant units, including these primary settling tanks and chlorine house and cylinder shed (rear) rest on cast-in-place concrete piles.

Modern Is the Word

Electronic metering and control, a container hauling system and heat exchangers for fuel conservation help make the Weirton, W. Va., sewage treatment plant one of the most modern on the Upper Ohio River

By **W. D. BARKSDALE*** Superintendent

Although providing primary treatment only, we feel that Weirton has the best looking and one of the most modern plants on the Upper Ohio River. Special features include magnetic metering of raw sludge, electronic sludge-thickness controllers and the use of containers for hauling sludge cake and grit. The plant, with separate sludge digestion, cost approximately $1,450,000. The neat buildings and grounds, located on the banks of the Ohio River at the western entrance to the city, have made this approach the most attractive way into the city.

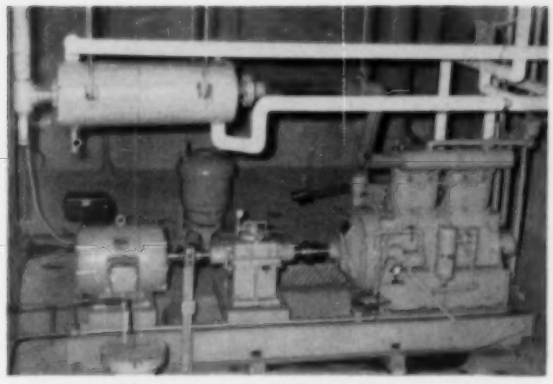
The plant represents only part of a $6,000,000 sewerage program started in 1951 and scheduled for completion this winter. Most of the work was done during the past three years.

The program is almost as old as the city itself, for Weirton was incorporated July 1, 1947 and includes the previously incorporated towns of Hollidays Cove, Marland Heights, Weirton Heights, and the unincorporated town of Weirton.

In 1955 the city engaged the consulting engineering firm of Alden E. Stilson and Associates of Columbus, Ohio, to make a preliminary report and to begin the field work necessary for the design of an adequate sewage-collection system and treatment facility. Prior to this, the firm had completed work on several small collection systems and small area treatment facilities such as area septic tanks. Although some of the internal collectors were built in 1952, the program didn't start until May 1956 with the formation of a three-man Sanitary Board.

Work on the plant started in July 1958, and on January 1, 1960, the Sanitary Board took it over for operation. During this same period eight sewer contracts were completed, accounting for approximately 100,000 feet of sewers and a 3,200-

* A three-man Sanitary Board, composed of the mayor, one registered professional engineer and a layman resident of the city, supervises and controls construction, maintenance and operation of all sewerage facilities in Weirton. In 1958 the Board engaged Mr. Barksdale as superintendent of the entire sanitary sewerage system.



The heat exchanger (upper left) transfers heat from the cooling system and exhaust from this gas engine to the building heating system. The engine drives one of the raw-sewage pumps.

All incoming sewage is pre-aerated in these tanks before entering the primary settling basins. The main control building is in the background.

for the Weirton Sewage Plant

foot-long, 60-inch-diameter hard-rock tunnel carrying a 24-inch reinforced concrete sewer. The remaining portion of the program, now under construction, consists of some eight miles of internal or lateral sewers to be paid for on a property-owner assessment basis.

Primary Treatment

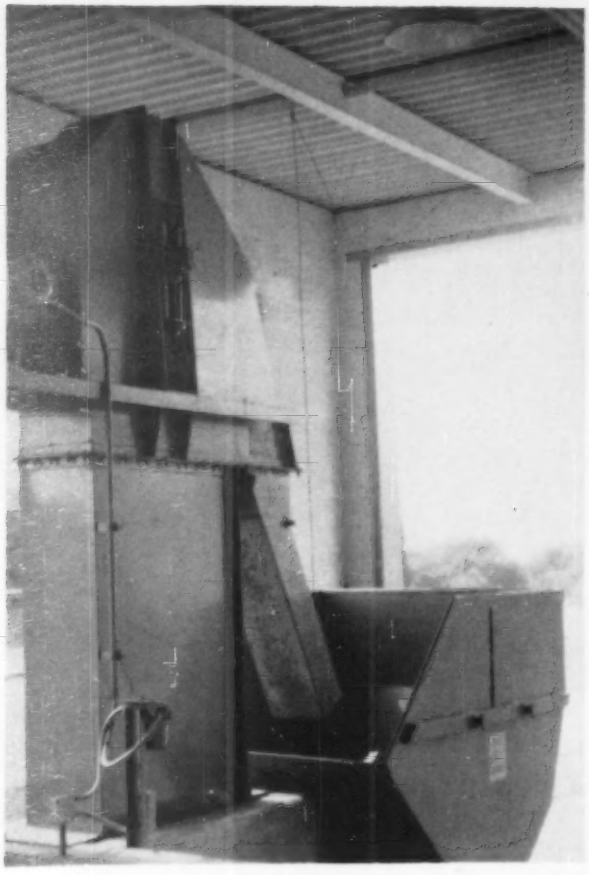
A motor-operated 3x4-foot sluice gate controls influent entry to the plant, followed by two 24-inch Model B Chicago Pump Barminutors. The grit tank, 16½ feet long by 12 feet wide and 9¾ feet deep, contains an eight-tube Chicago Pump air-diffusion assembly and a Jeffrey grit-removal system. The grit collector consists of a horizontal spiral, positioned under the diffusion tubes and driven by the foot shaft of a bucket elevator. The elevator buckets discharge into a Load-Lugger container. To haul both grit and sludge cake to point of disposal we have a Model CH-300 Ingersoll Kalamazoo Load-Lugger mounted on an International truck and several five-yard containers with canvas covers.

Pre-aeration takes place in two tanks each 14 feet long, 11¼ feet wide and 16¾ feet deep containing 20,000 gallons. The two swing-type air-diffusion assemblies in each tank carry 26 diffusion tubes 25 inches long by two inches outside diameter. Three Roots-Connersville rotary blowers provide the air. For pre-aeration we have one 210-cfm unit, plus a second unit powered through a Reeves Vari-Speed Drive rated at 150 cfm to 350 cfm. A single 48-cfm unit supplies air to the grit tank.

The accompanying table shows

Sewage Treatment Plant Data
Weirton, West Virginia

	Population	MGD	Aerated Grit Tank Retention (Minutes)	Pre-Aeration Retention 2-Tanks (Minutes)	Primary Settling Retention 2-Tanks (Hours)	Primary Settling Tank Overflow Rate Gal/S.F./Day 2-Tanks	Primary Settling Weir Overflow Rate GPM/L./F. 2-Tanks	Chlorine Contact Tank Retention (Minutes)
Initial Average Flow		3.3	6.5	72	3.04	535	5.3	24.8
Average Design Flow	38,700	4.0	5.4	30	2.5	650	6.3	20.4
1958 Maximum Design Flow		7.0	3.1	17	1.42	1,135	11.1	11.7
1983 Maximum Design Flow		10.0	2.25	12	1.00	1,620	15.9	8.2



Weirton's sewage treatment plant occupies an eight-acre tract. Ground improvements include grass, shrubbery paved roadways, parking area and sidewalks.

←

This bucket elevator transports grit from the grit-removal basin to a five-yard container. The container is then trucked to the disposal site.

various data on these tanks as well as the settling basins and chlorine contact chamber.

Of the three raw-sewage pumps, two are all electric and one is connected by a selective dual drive to an electric motor and a 70-hp Climax gas engine. Ratings are two at 2,000 gpm, at 39-foot head, and one at 3,500 gpm, at 42-foot head. The last is the dual-powered unit. The gas engine, which serves as the primary source of power for the dual-drive pump, has a dual ignition system which is started with compressed air supplied by a Gardner-Denver compressor. The fuel system consists of combination sewage gas-natural gas carburetors with atmospheric regulators. These carburetors automatically blend the natural gas into the fuel supply whenever the sewage-gas supply becomes insufficient to operate the gas engine by itself.

An Autocon Type M Selectrol controls the sequence operation of the raw-sewage pumps. A float-operated mechanical governor varies the speed of the gas engine directly with liquid level in the 64,500-gallon-capacity wet well.

Primary settling takes place in two basins 96½ feet long, 69 feet wide and 10½ feet deep. Equipment consists of Jeffrey flight-type longitudinal and cross collectors with redwood flights. Both tanks have scum collectors.

Effluent Chlorinated

Effluent from the primary tank passes through a chlorine contact chamber before discharging to the Ohio River. A 1,000-pound-per-24-hour-capacity Wallace & Tiernan chlorinator designed for manual or automatic operation adds the chlorine. This unit can be controlled by the Foxboro Teletax sewage metering equipment having a flow range of 0 to 12 mgd.

For raw-sludge pumping we have two Wemco pumps designed for continuous 24-hour service. They have four-inch suction lines and three-inch discharges. Equipped with Reeves drives, they have a capacity range of 50 gpm to 100 gpm at a head of 45 feet. The recessed impeller mounted out of the flow path between inlet and discharge enables passage of solid particles equivalent in size to the discharge pipe diameter.

Process Engineers electronic sludge-thickness controllers, with transmitters connected to six-inch-diameter sludge piping, control pump operation according to the thickness of settled sludge withdrawn from the settling tanks. Each transmitter contains a light-transmitting element and a photoelectric relay. A timer having a 24-hour cycle and capable of adjustment so as to start the pumps at intervals of 15 minutes controls the starting of the pumps. Each unit is an independent system.

A single Foxboro magnetic flow meter records, indicates and totalizes the raw-sludge flow from the two variable-speed sludge pumps.

A smaller Wemco pump, rated at 50 gpm at 45-foot head, removes the grease and scum from a collecting manhole adjacent to the primary settling tanks.

The two digesters, each 57 feet in

diameter by 27 feet deep, provide 3.74 cubic feet of sludge capacity per capita at our present population of 30,910, and 2.82 cubic feet per capita at the expected 1980 population of 40,840. Equipment includes Pacific Flush Tank insulated floating covers, a Model 500 digester heater and heat exchanger, supernatant selectors and gauges, liquid level indicators, and a waste gas burner. The digester building also houses four gas meters, a gas pressure booster, two digester sludge-recirculation pumps and a digester transfer pump to transfer sludge from one digester to the other.

The heat exchanger heats the digester contents by means of recirculating digester liquor through the unit and by heating raw sludge before it enters the digester system; or by heating a mixture of the two. In addition to maintaining the digester contents temperature at 95°F, the unit also provides simultaneously 250,000 BTU per hour for hot water building radiation. Both sewage gas and natural gas is used for this purpose.

Vacuum filtration takes place on a single Komline-Sanderson unit measuring eight feet in diameter by six feet wide.

Filtered sludge discharges into Load-Lugger containers and is then hauled to a final disposal point.

The control-building heating system consists of a 525,000-BTU Kewanee-Ross hot-water boiler and several unit heaters. To conserve fuel we have two heat exchangers connected to the gas-engine cooling system. The No. 1 heat exchanger has a capacity of transferring 150,000 BTU per hour from the engine jacket and exhaust heat exchanger cooling water to the control-building heating system. Flow through the heat exchanger is approximately 34 gpm at a temperature of about 185°F.

Removes Heat

The No. 2 heat exchanger removes heat from the engine cooling system not removed by the first unit. This heat exchanger operates whenever all or part of the engine heat is not dissipated into the building heating system. Cooling is provided by city water at 60°F, with the flow controlled by a two-way modulating valve set to start flow of city water when the temperature of incoming engine water reaches a temperature of 180°F.

Each of the three General Electric motor-control centers consist of vertical sections 20 inches deep, 20 inches wide and 90 inches high. They are located in the main control building (six sections), the sludge pump building (three sections), and the digester building (four sections). We receive 440-volt, 3-phase, 60-cycle power from the Monongahela Power Company.

Besides a fully equipped laboratory and other necessary facilities, the main control building also contains two offices—one for the Sanitary Board Superintendent and the other for the engineering assistant and chief operator.

Weirton's plant is located on land given to the city by the Weirton Steel Co., situated on the east bank of the Ohio River, at Lock 10. Six of the eight acres of ground are enclosed by a six-foot-high Continental chain-link fence. The entire site was filled with blast-furnace slag approximately 15 feet deep, choked with a layer of fine slag and covered with one foot of top soil. All buildings and tanks rest on 34,220 lineal feet of concrete piling which was cast in place.

Roadways and parking areas were constructed of hot-mix, hot-laid bituminous material with concrete sidewalks and curbs. The balance of the area consists of lawn, shrubbery and other plantings. ◄◄

Mobile Meter Repairmen

In Council Bluffs, Iowa, the man on a platform probably isn't making a speech but installing traffic lights and regulatory traffic signs. The city's traffic engineering department has equipped a pickup truck with a special platform on top to provide easy access for any work of this nature.

Also, a man on a motor scooter probably isn't out just for the pleasure but intends to repair some of the city's 1,200 parking meters in operation on the street and in municipally owned parking lots. The city supplies the maintenance man with a Cushman scooter with a utility box and cab for this work. ◄◄

A pickup truck with a platform makes it an easy job to maintain traffic lights . . .

. . . while a man in a motor scooter can get on the spot in a hurry to repair parking meters.

Stockpiling the material from the trench excavation signals the beginning of a new day's operations.

Sanitary Landfill By Contract

. . . plus refuse collection provides Peoria, Ill., with a complete, sanitary disposal service for $3.06 per person

City Manager August A. DeBard, Jr., and contractor John Vanderveld, Jr., inspect a courtesy receptacle, demonstrated by a service representative, which the contractor furnishes and empties for civic events.

At an annual per-capita cost of $3.06, 103,000 Peorians are the happy recipients of a well operated system of refuse collection and disposal by a private contractor who doesn't skimp on sanitation. The change in collection and disposal occurred after the National Disposal Service, Inc., was awarded a $315,750-per-year contract last June, $24,070 below the next bidder. A national survey by the American Public Works Association determined that cities in the 50,000-to-100,000-population class pay an average of $4.34 per capita, Peoria's cost being 29% below this average.

Evidence that the service is good is borne out by City Manager August A. DeBard, Jr., who reports that complaints have dropped 40% from the level reached a few years ago. No stranger to this type of operation, the contractor provides similar services in Waukegan, Barrington and Rockford (p. 104, THE AMERICAN CITY, June 1959) which enabled him to start the Peoria operation in full gear. He acquired nine Leach Packmaster trucks (one a spare) to serve the 30,500 residences, and a Caterpillar 977H Traxcavator with a 2½-yard bucket to operate the 60-acre sanitary-landfill site which he leased from a railroad.

Averaging 36.5 miles for each of their three trips per day, eight trucks collect more than 400 compacted yards of combined refuse and garbage for daily disposal. In addition the Traxcavator excavates for and covers 167 compacted yards (500 yards loose volume) brought in every day by some 20 private haulers, the city's street department and civic organizations. Private haulers pay from $1 to $2 per truckload; city and civic groups dump free. The contractor also provides courtesy containers for free pick up during special civic functions and assists in a week-long spring clean up by collecting from the customers without extra charge the winter's accumulation of rubbish.

The refuse-truck bodies are mounted on White chassis with tilt cabs, heavy-duty axles and 10:00-by-20:00 tires. Fast and reliable, each truck requires a crew of only two men. Although rated at 17 compacted yards, it picks up an extra loose yard by carrying the final deposit in the hopper.

Collection crews pick up the 20-gallon containers from each residence once each week at the curb or alley. Rather than scatter the trucks over widespread portions of the city, the contractor arranged his routes so that all trucks work adja-

cent to each other every day. This facilitates the correction of missed pick-ups and provides mutual assistance when loads are extraordinarily heavy. New men are thoroughly trained before taking their place on the route.

A sanitary engineer, retained by the contractor, periodically surveys the landfill site and recommends the best and most efficient method of operation. The present site lies in bottomland, 12 feet below the surrounding ground elevation. As a result, the single-trench, single-lift method is being used. With this cut-as-you-go operation no more material is excavated from the 35-foot-wide by 10-foot-deep trench than is needed for each day's cover. Every morning the Traxcavator operator excavates the sandy clay, stockpiling it on top of the previous day's cover. Backing down the sloping ramp of the trench, the Packmasters dump their refuse in the bottom of the ditch. Private haulers, because they usually have to hand-shovel their loads, dump from the side of the trench to avoid creating waiting time for the contractor's trucks.

The tractor then packs the refuse as tightly as possible against the preceding day's cell. At the end of each day the operator completely closes the current cell with the previously stockpiled dirt to a depth of 20 to 24 inches on top and six to eight inches on the side and end, thereby confining any spontaneous combustion to one cell. The landfill is closed for the day at 3:30 p.m. to allow for the application of the dirt blanket.

When the equipment is not being used, it is stored in a new 30-by-130-foot Stran-Steel building on the fenced landfill site. A second building of the same type, measuring 40 by 60 feet, houses offices, shower and locker facilities and the maintenance shop.

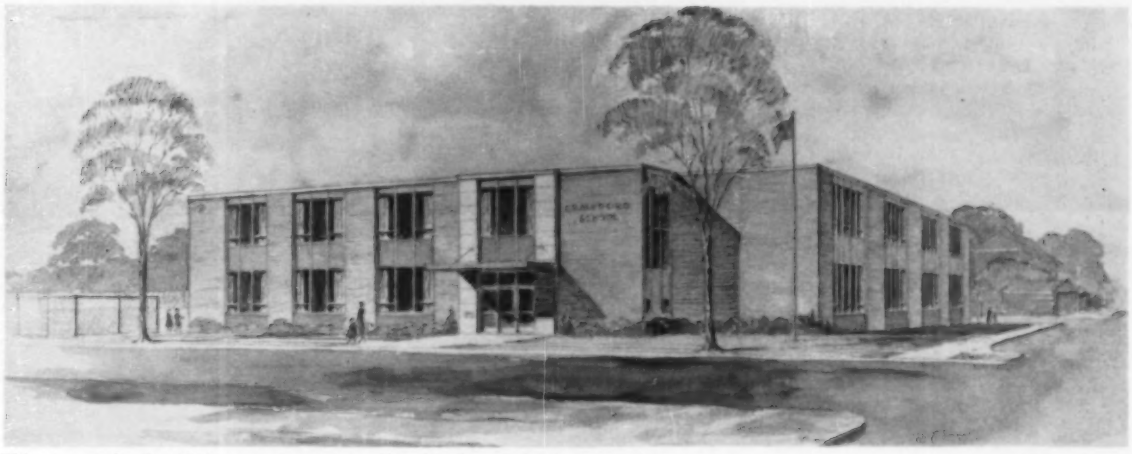
A strict preventive-maintenance program gets the credit for economical and trouble-free equipment operation. Every month each truck is road-tested and given a complete lubrication, oil change, speedometer check, minor tune-up and inspection of the frame and working parts; brake lining, bearing and engine head maintenance is a yearly item. In addition to a similar program for the Traxcavator, lift-arm linkages and other exposed moving parts are lubricated daily, the rollers excepted.

The current collection and disposal contract will be in effect for a total of five years with an escalator clause accommodating population changes and cost of living salary increases to street department employees, such increases being accorded also to refuse company employees. Peoria's citizens applaud this clean and efficient operation. ◄◄

While a truck dumps its load the power-shift Traxcavator compacts the refuse.

With garbage compaction completed, the operator covers the day's accumulation with a layer of earth.

By nightfall the only evidence of a sanitary landfill is a few scattered shreds of paper and the tracks on the earth cover of the current day's cell.



This new school will be constructed in the Southwest Project area while the old school (below), built in 1870, will be razed.

Terre Haute's Urban-Renewal Program

. . . brings the breath of new civic life, stimulating economic growth and health

By **MORRIS LANDSBAUM**
President
Redevelopment Comm.

An urban-renewal program is leading Terre Haute, Ind. (population 72,000), into a new and constructive era of its history. Over the past 40 years, the city has endured many setbacks. The passage of the Prohibition Act closed the breweries and distilleries which were principal industries in the area. In 1923 the Pennsylvania Railroad moved its repair shops from Terre Haute. Changes in coal-producing methods have reduced the number of miners in Terre Haute from 12,000 in the 1920's to only some 1,300 today.

Since the end of World War II, Terre Haute has succeeded in attracting some substantial, diversified, growth industries. However, the problem of blight and decay which accumulated over a period of four decades was monumental and far beyond the limited financial ability of the city to solve alone.

In December 1958, the Indiana Supreme Court ruled that urban-renewal programs could legally be undertaken by Indiana cities.

Mayor Ralph Tucker immediately undertook the development of an urban-renewal program. He and the City Council selected leading citizens as Redevelopment Trustees, and they in turn appointed five citizens representing a broad cross-section of the community to serve as Redevelopment Commissioners.

The Redevelopment Commission secured the services of the City Planning Associates of Mishawaka, Ind., to provide technical assistance. By July 1959, the city's consultants had prepared a workable program for urban renewal which was approved by the Federal Housing and Home Finance Agency as a blueprint for action.

Realizing the need for an efficient and effective administrator, the Redevelopment Commission selected Emanuel Gorland to organize and serve as executive director of the Department of Redevelopment. Mr. Gorland, selected from 20 applicants, immediately started a policy of public information.

Shortly after his arrival he wrote 20 articles for the local newspaper fully explaining all aspects of planning and urban renewal. He has also welcomed invitations from nu-

These typical slum dwellings will be torn down in the redevelopment area; they face Fairbanks Park and the Wabash River.

merous organizations and service clubs to explain the city's program. He has continued the Commission's policy of keeping all forms of public communication informed.

In the year that has passed since the development of the city's workable program, giant steps have been taken towards the goals set forth:

- **A city-wide analysis of housing conditions and needs on a neighborhood-by-neighborhood basis has been completed.**
- **The greater part of a badly needed comprehensive or master plan for the city has been prepared and the entire plan will be completed early this year.**
- **New subdivision regulations have been prepared and are now under study by the Plan Commission.**
- **An up-to-date minimum-housing ordinance has been enacted.**
- **Based upon the city-wide survey of neighborhood conditions, three areas were selected as urban-renewal projects and applications were submitted to the Federal Urban Renewal Administration for assistance in carrying out the work.**
- **One of the project areas covering some 200 acres is now in the final planning stage and execution of the project is expected to begin early next year. This is one of the largest projects of its kind in the Midwest.**
- **The studies of housing conditions and needs carried out by the Commission clearly showed the need for a low-rent housing program to assist in adequately relocating families to be displaced by the urban-renewal program. Within three months' time Mayor Tucker, working closely with the City Council, had set up a Housing Authority for the city, and the Authority was given approval by the Federal Public Housing Administration to build 500 units of low-rent housing. These units are currently on the Architects' drawing board.**

Indiana State Teachers College, located in Terre Haute just adjacent to the central business district, has grown rapidly over the past decade. Its expansion has eliminated many substandard buildings but it still abuts a large blighted area. The Redevelopment Commission is prepared to undertake slum clearance in this area and in the central business district, through cooperation with the college and utilization of credits allowed under the federal program for monies spent by the college in its expansion program.

As a result of the city's work a comprehensive study of the problems and needs of the central business district has been privately financed. This study will be used by the city and the Redevelopment Commission as the basis of an action program to rehabilitate or rebuild this key segment of the community. Additionally, the program has spurred the rehabilitation or demolition of substandard buildings by many individuals and business firms, and encouraged new construction.

Those of us who live here recognize that Terre Haute is now entering into a dynamic new era—an era of economic health, growth and prosperity. A vast renewal of the city is taking place—not only a physical renewal but a renewal in the spirit and pride of its citizens. ◄◄

Intergovernmental Cooperation

At present, local governments in the Milwaukee area are using 14 different types of intermunicipal cooperation, according to Norman N. Gill, executive director, Citizens' Governmental Research Bureau, Milwaukee, Wisc. The Research Bureau has identified 124 cases of such cooperation, highlighted by library-service contracts and fire-protection agreements. The exchange of facilities accounts for 25% of the 124 cases. Service arrangements on a fee or rental basis account for another 25%. Some 15 professional organizations of public employees within the country (i.e., fire chiefs' associations, etc.) facilitate varying degrees of informal cooperation. The remaining cases represent the informal sharing of facilities such as mutual assistance among police departments and the informal purchasing on master contracts.

Mr. Gill feels that these arrangements can be made more effective by certain additional steps:

- **Legislation to strengthen existing cooperation statutes**
- **Filing of copies of all intergovernmental cooperation agreements with the county's elected executive**
- **Greater adoption of formal written arrangements for intergovernmental cooperation**
- **Appointment of a permanent standing committee on intergovernmental cooperation by each of the 22 civil governments and the 27 school districts**
- **Organization of a proposed Metropolitan Milwaukee Advisory Group on Intergovernmental Cooperation, consisting of the chairmen of these suggested standing committees, plus the chief executive of each municipality and school district as *ex-officio* members**
- **Quarterly meetings of the heads of the major professional associations of public employees within the county, and of the major citizen boards and commissions (health and library boards, etc.)**
- **Preparation of a joint annual report of activities by the 22 civil governments, and a joint report by the 27 school districts which would supplement the present 630 pages of annual reports that now confront the interested citizen.** ◄◄

Pipe-laying is one example of the many ways these

multi-purpose

tractor-shovels make budgets behave every month of the year

When you buy a PAYLOADER you have *more* than a tractor-shovel. You have the most *proven* tractor-shovel, and the most *useable*—because of the many and unusual kinds of allied equipment that you can use with it. Several of these tools are available *exclusively* on rubber-tired PAYLOADER tractor-shovels.

Reduces Your Equipment Costs

With this one basic machine of broadest usefulness, you eliminate the big investment in specialized single-purpose machines. You continue to cut costs because you can keep a PAYLOADER busy more hours of the day and more days of the year.

Sizes to fit your needs

From the PAYLOADER line you can select the exact size and type of tractor-shovel that fits your needs and budget because there are eight basic sizes – from 2,000 to 12,000 lb. operating capacity – and more than 20 models.

Having decided on the particular PAYLOADER that you require, you can include whatever pieces of allied equipment you want immediately – or can add them later as they are needed.

Consider the potential of a PAYLOADER – plus one or more of the following tools – to hold down your equipment budget and to get necessary work done with a minimum expenditure of time and labor:

Side-boom – an *exclusive* on PAYLOADER units – lifts up to 6 tons at 4 ft. overhang; has double-acting, hydraulic-power boom extension; does not interfere with the bucket use; can work on pavement without damage, and is available for three PAYLOADER sizes.

Four-in-one Bucket – an *exclusive* on PAYLOADER units in the rubber-tire class. This two-piece bucket performs shovel, bulldozer, clamshell and scraper operation – and is available in place of the conventional bucket on all PAYLOADER four-wheel-drive units.

Backhoes are available for front or rear mounting on several PAYLOADER sizes and are recognized as the best-engineered in the industry. One of these can be rear-mounted on several PAYLOADER sizes along with the Side-boom and 4-in-1 Bucket, and any of these three tools can be used on the same job.

Blacktop Spreader interchanges with the bucket and has its own engine power. With hopper capacity of 2 cu. yds., it lays hot or cold mix up to 8-ft. wide and up to 6-in. thick – instantly adjusts for widths up to 4 ft.

Vibratory Compactor is available for several 4-wheel-drive PAYLOADER models and interchanges with the bucket. It is self-powered and self-contained, and develops maximum densities in all granular soils.

Pick-up Sweepers are interchangeable with the buckets on several PAYLOADER models and can dump their loads directly into trucks. Separate hydraulic motors drive main and gutter brooms.

Snow Plows of all types are available, interchangeable with the bucket, including one-way, Reversible, Vee and self-powered Rotary types.

Other PAYLOADER Attachments include hydraulic earth augers, fork-lifts, winches, backfill and angling blades.

Your Hough Distributor is ready to show you how a PAYLOADER with its multi-purpose usefulness can work economies for you the whole year through.

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HOUGH®

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Present traffic handling pattern at Mountain Boulevard (looking south at Calveras Avenue) regulates peak traffic with ease.

Traffic Committee Provides Channelization For Oakland's Intersections

By **WESTON E. FOLLETT**
Assistant City Engineer

Seventy-eight percent of the traffic accidents in Oakland, Calif., occurred within or adjacent to intersections. The Oakland Police and Traffic Engineering Departments found that on city streets the accident rate is 14.15 accidents per million miles of vehicular travel whereas, the State Division of Highways, District IV, San Francisco, reports that on full freeways, free of intersections, the rate is only 1.5 accidents per million miles of travel.

In addition to this high accident rate caused by intersections, the capacity of major city streets is cut by the flow of cross-street traffic. A comparison with a freeway lane capacity of 1,500 to 2,000 cars per hour to a city street capacity of 500 to 700 cars per lane forcefully points this out.

Much could be done by special intersection treatment. In 1953, a Traffic Committee was revived at the suggestion of City Engineer John A. Morin. The committee meets weekly and consists of the city engineer, the city traffic engineer, the superintendent of the electrical department, the street design engineer and the police captain in charge of traffic. During the last six years this committee has reviewed and approved the design of over 113 intersection channelizations.

One of these is on East 14th Street at Bond Way and 46th Avenue. East 14th, a main east-west four-lane arterial street, carried in excess of 660 vehicles per hour per lane during peak. Due to partial completion of a city project, Bancroft Avenue, traffic on Bond Way was approaching capacity. Had traffic volumes permitted, a three-phase signal treatment would have solved this problem.

The Committee proposed a line on East 14th Street, providing a left-turn lane into Bond Way, and the reconstruction of 46th Avenue southerly of East 14th

(Continued on page 113)

As shown here. traffic at East 14th Street and Bond Way has been moving freely for over three years.

HERE'S THE

NEW ROCKWELL M-3 PARKING METER

with all new, stainless steel "guts" for trouble-free operation and it takes 5 coins through a single slot.

If you want manual meters, check these features that will assure you better traffic control at far lower cost:

- **Single Coin Slot** takes 1¢, 5¢, 10¢, 25¢, and tokens.
- **Stainless Steel** working parts resist wear —stop corrosion.
- **Greater Visibility** with new, big violation flag . . . easy to patrol.
- **Easily Accessible:** entire mechanism exposed with turn of the key.
- **Interchangeability:** "unitized" door and mechanism fit Dual automatics.
- **Tamper-proof** design rejects paper clips, etc.—gearing completely protected.

And the famous Dual tradition of rugged construction and clean, simple design that has made Dual the leader in metered traffic control devices.

The new Rockwell-built Dual Manual Parking Meter makes the line more complete than ever before. No matter what your needs, no matter what your preferences, there is a Rockwell-built Dual Manual, Automatic or Twin-Dual Automatic to help you get better traffic control, increase parking meter revenue and slash maintenance costs. Write for complete details: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.

A few turns of key exposes mechanism for fast, easy maintenance. Dust-proof housing covers brass clock works.

See how the new violation flag is more easily seen . . . this meter has 3-way out-of-order signal.

DUAL PARKING METERS

another fine product by

ROCKWELL

How Sylvania Mercury Banner Lamps can help lower your accident rate—and your TCL

Sylvania up-to-date street lighting saves more than it costs! In one city better street lighting cut nighttime traffic deaths from 9 times the day rate to twice the day rate.

Another city reports better nighttime street lighting is saving 50 lives a year.

A Western city discovered better street lighting in one area cut pedestrian accidents by 43.3%.

How about your town?

New Sylvania Banner Mercury Lamps not only put *2½ times more light* on the street than incandescent lamps *for the same power cost*, they also give you these five extras:

1. Life extended to 12,000 hours with trimetallic electrodes.

2. More light output initially and higher maintained light.

3. Exclusive Ruggedized construction, *built-in* protection against shock, vibration, temperature extremes.

4. Life recording base keeps its own performance record.

5. Certified Performance Policy guarantees that "Banner Mercury Lamps may be returned to the supplier for full exchange if they fail in less than 1000 burning hours, and thereafter (up to 5,000 hours) for pro-rata exchange in accordance with a pro-rata exchange value table set forth clearly in the policy form."

Let Sylvania help improve your accident record and lower TCL . . . Total Cost of Lighting (cost of lamps plus power plus maintenance). Call your Sylvania representative, or write: Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

SYLVANIA

Subsidiary of **GENERAL TELEPHONE & ELECTRONICS**

(Continued from page 110)

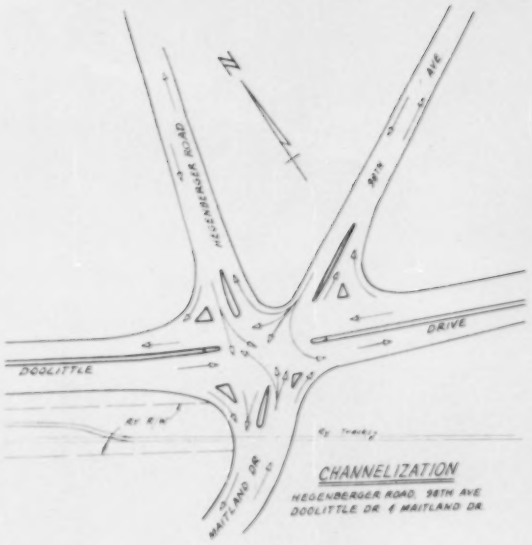
Street, providing a free right-turn from 46th Avenue into East 14th Street, as well as providing a direct alignment into Bond Way. The project was constructed and has been operating successfully for over three years.

The completion of Warren Freeway in 1959 created a problem by discharging the full load of a four-lane freeway immediately into a two-lane semi-improved city street. Prior to the freeway construction, Mountain Boulevard was carrying 9,000 vehicles per day; and during peak hours, traffic on the Mountain Boulevard leg often "backed up" a quarter of a mile beyond the intersection of Calaveras Avenue. It was realized that with the large increase of traffic to be created by the freeway, this location would become a major problem.

A new west-bound free right-turn lane removed one heavy vehicular movement from the intersection which was then channelized as shown by the illustration. Mountain Boulevard is now carrying 23,000 v.p.d. with no "back-up" and there have been no reported accidents since its construction a year ago. This record is truly an accomplishment, as the accident rate prior to construction was four accidents per year. The work was done by Street Department forces at a total cost of $3,575.

A third example of the Committee's improvement of intersections was a project located at the five-point intersection of Doolittle Drive, Hegenberger Road, 98th Avenue, and Maitland Drive. The complexity of the intersection coupled with the extremely heavy traffic volume on Doolittle Drive created a problem which apparently could only be solved by an extensive grade-separated intersection. Since Doolittle Drive is a state highway, the California Division of Highways worked with our design engineer in developing the final approved plan. (See the line drawing.)

To provide the necessary storage on Doolittle Drive, extra lanes were constructed on both legs of this street as well as left-turn lanes. Hegenberger road was widened to provide storage as well as a free right-turn into Doolittle Drive. Traffic-actuated signals were installed so that the Doolittle Drive left-turn movements were individually omitted whenever they were not actuated.



New traffic pattern for a five-street intersection.

This project was constructed by city forces. The total cost of $60,000 was shared on a 2/5th state, 2/5th city, and 1/5th Port of Oakland split based upon the jurisdiction of the five streets entering the intersection.

In conclusion, I would like to emphasize the success of this new traffic committee in solving the numerous traffic problems that have faced the City of Oakland during the last six years. Its success is attributed to the fact that the group operates as a staff organization using the technical ability and experience of each member. ◂◂

Parking Meters in Ohio

In Ohio, where there are over four million registered motor vehicles, the parking meter has come into extensive use as one of the aids used by municipalities in an attempt to solve the traffic and parking problem. Parking meters reduce overtime parking, increase turnover and facilitate enforcement.

The sidewalk sentinel is big business. A recent survey by the Ohio Municipal League showed 201 Ohio cities and villages using parking meters. The largest is the City of Cincinnati with 8,303. Of these 8,044 are located at the curb and 259 regulate parking on off-street sites. These meters in 1959 produced $781,828.

The smallest community reporting in the League survey was Amsterdam with an estimated 1960 population of 1,110. The Village of Amsterdam installed 63 meters in 1956 and for the last three years has averaged slightly over $2,200 per year in meter revenues.

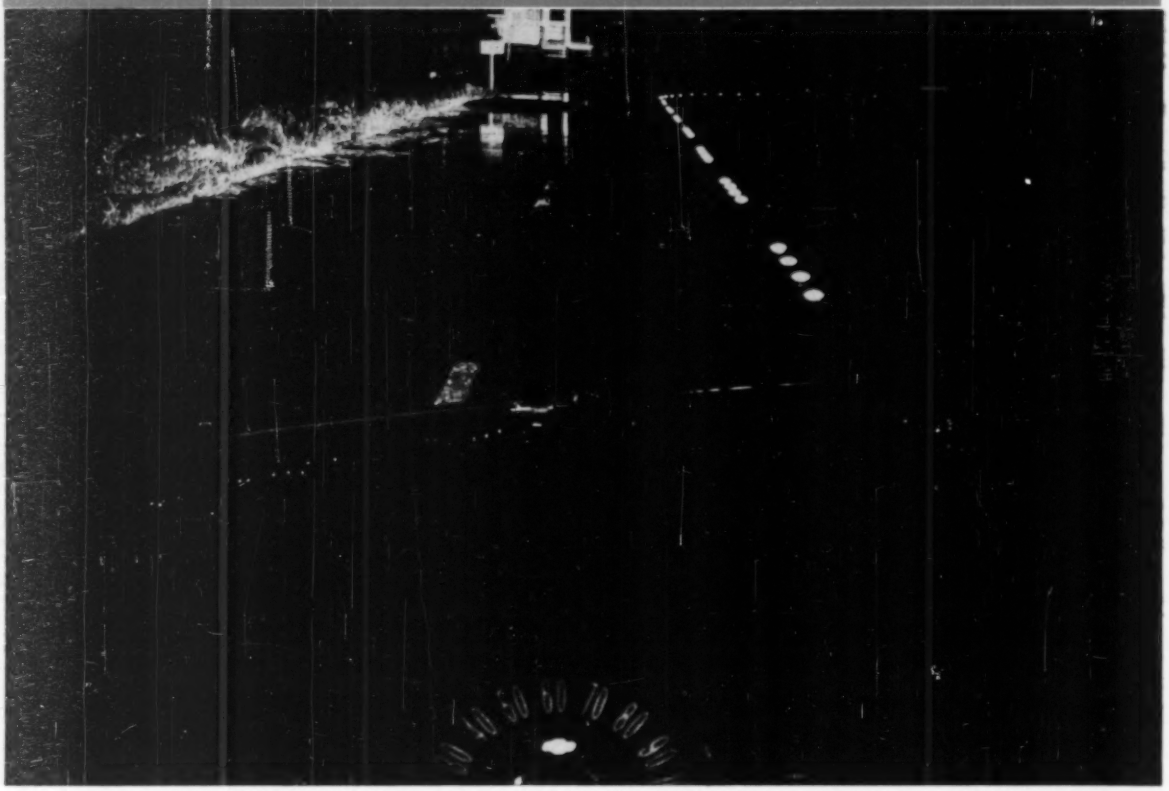
The average annual yield per meter in 1959 ranged from $20.86 to $121.81. The medium or middle point of all communities reporting listed from lowest to highest was an average yield per meter of $60.09. In general, the survey indicated that the larger the community, the greater the yield per meter.

In the early days of the parking meter, the fee was usually a single nickel. This fee was not for the rental of space but rather was an economic deterrent to discourage repeating, in violation of parking limits. On this basis the legality of parking meters was established.

The most commonly used rate schedule for parking meters in the downtown business area according to the League survey, is the meter offering 12 minutes for one cent, one hour for five cents and two hours for ten cents. Fifty-nine municipalities reported the use of this schedule and another 18 reported the same schedule without the two-hour rate.

Condensed from an article in "Ohio Cities and Villages" for September 1960, published by the Ohio Municipal League, 60 East Broad St., Columbus 15, Ohio.

Announcing—A MAJOR ADVANCE IN HIGHWAY MARKING SYSTEMS



Unretouched driver's-eye view comparing newly painted glass-beaded traffic stripe with American-Marietta's Lite-Lane Traffic Marking System under wet road conditions—high beam.

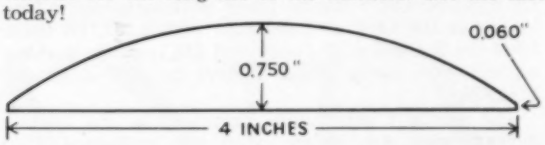
WHEN WET TRAFFIC STRIPES VANISH NEW *Lite-lane* STAYS BRILLIANT!

SUPERIOR NIGHTTIME VISIBILITY—when heavily glass-beaded paint stripes disappear on wet surfaces, American-Marietta's amazing new Lite-Lane markers remain brightly visible. Even when rain and fog make conventional systems useless, Lite-Lane provides exceptional reflectance when needed most.

EFFECTIVE TRAFFIC CHANNELING—day or night Lite-Lane clearly stands out. Its low convex profile safely and audibly warns careless or drowsy drivers that they are straying from their lane without offering impact hazard.

EXCEPTIONAL DURABILITY—Lite-Lane markers will survive extreme traffic conditions to remain intact and highly reflective for at least 7 to 10 years. Because the durable plastic base material contains a uniform dispersion of glass beads, wearing action of vehicle tires constantly exposes brilliant new reflective surfaces—**Lite-Lane markers stay bright throughout their entire life.**

COMPLETE SYSTEM—Lite-Lane Traffic Guide Markers are part of a complete system. It includes tough and durable epoxy-type adhesive for marker-to-pavement bonding, semi-automatic application equipment, and method of installation which insures top performance. This system developed by American-Marietta engineering and research provides minimum in-place costs without maintenance for the long life of the markers. Get the facts today!



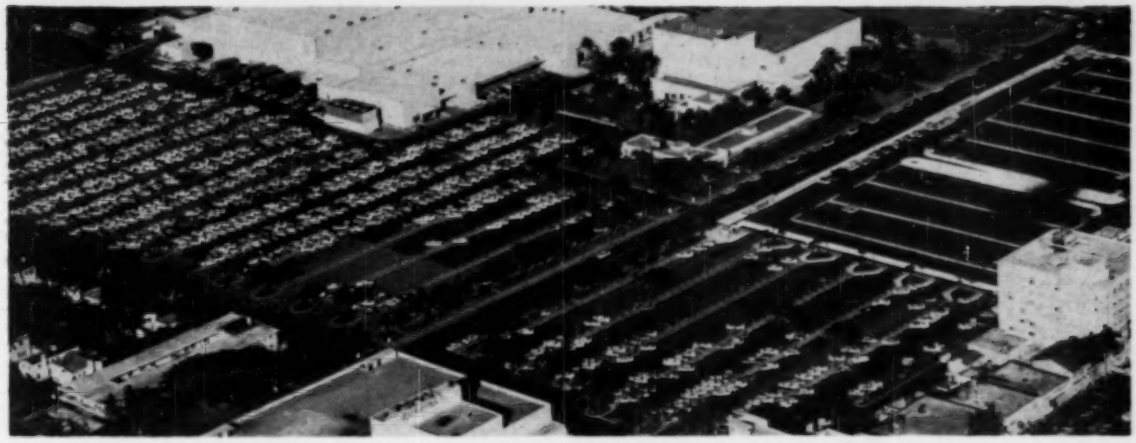
Send for Complete Details

Write Dept. A & P for detailed booklet outlining facts you want to know about the LITE-LANE TRAFFIC GUIDE SYSTEM.

Lite-Lane TRAFFIC GUIDE SYSTEM

AMERICAN-MARIETTA COMPANY
Adhesive, Resin and Chemical Division
3400 13th Avenue, S. W.
Seattle 4, Washington

A-M ®



Nickles, dimes and quarters from Miami Beach's parking meters have mounted high enough to pay off the city's first 1950 parking revenue bond issue of $1,480,000 on January 1, 1961, fourteen years before the due-date of 1975.

Mountain of Coins Pays Off Revenue Bonds

Miami Beach has collected enough nickles, dimes and quarters through its parking meters to pay off the last of a 1950 parking revenue bond issue of $1,480,000 on January 1, 1961.

At the rate the Duncan and Mark-Time meters are making money, the city's $1,850,000 parking revenue bond issue of 1958 will be paid off by 1970. It is not scheduled for repayment until 1978.

Miami Beach pioneered in creating municipal off-street parking facilities in 1940. First facilities were paid for from current city funds. As that system could not be expanded fast enough to prevent traffic strangulation, the city turned to parking revenue bonds after the war. City Councilmen Marcie Liberman and D. Lee Powell (now Mayor of Miami Beach) led in creating the self-supporting sytem. A special act of the 1949 Florida legislature authorized parking revenue bonds. Miami Beach's off-street parking sytem has been so successful in eliminating traffic strangulation in the resort city—host to 2,500,000 people annually—that it has been a model to other municipalities.

A full-time operating manager directs the system under the city manager. He supervises operation and maintenance, collections from meters, sale of parking permits, and enforcement. Mike Fox, now Miami Beach Police Chief, was the first operations manager. O. T. Rothwell directs the system today.

All the coins collected every day go to the Miami Beach First National Bank as depository for the four parking system funds. We keep the coins only long enough to count them. The four funds to which they are allocated are operation and maintenance, bond redemption and interest, renewal and replacement, and surplus revenues.

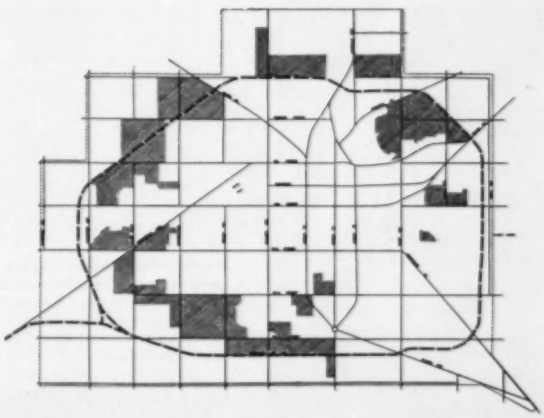
In addition to paying for itself 14 years ahead of time, the self-supporting system has produced funds for vigorous expansion. In 1951, 3,531 meters were in operation. Today's 8,790 coin-collectors are clicking, of which 3,837 are on-street meters and 4,953 are off-street. ◄◄

Lubbock's Loop

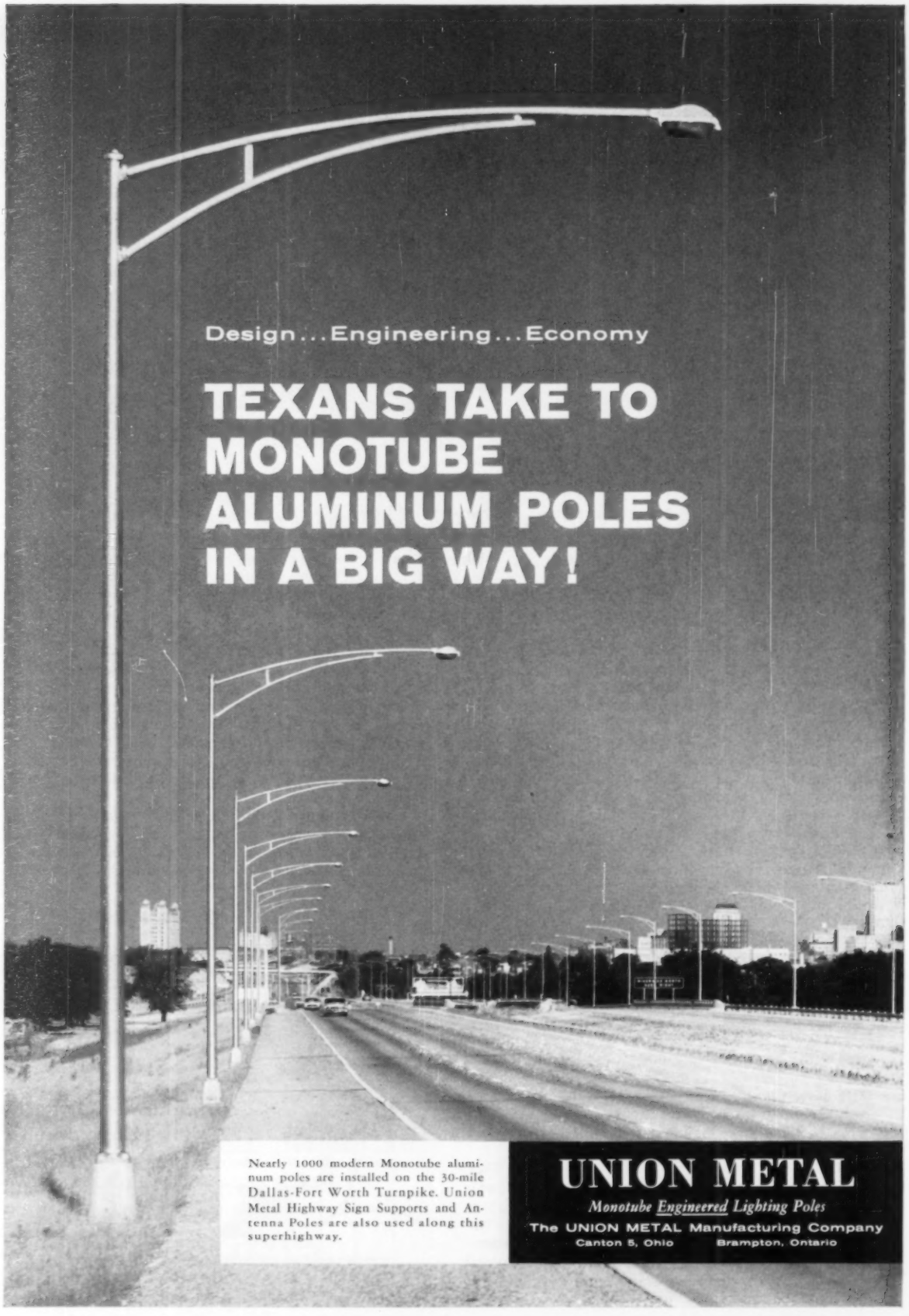
The annual report of Lubbock, Tex., the 50th since incorporation in 1909, contains the accompanying diagram of Loop 289. This loop will help provide Lubbock with a traffic dispersal (strainer) system featuring the newest in highway engineering.

The loop requires 26.5 miles of right of way of which 18 miles had been acquired. Construction started in November 1959 and completion is expected in 1967. The cost—$15,000,000.

The annual report, an attractive 24-page 5⅜x 8⅜-inch booklet, shows how municipal services have kept up with the huge growth that this "population gusher" has shown for, between 1909 when it was incorporated and 1950, it grew from a town of 1,500 persons to one of over 71,000 and by 1960 it had zoomed to 152,776. These services operate in an area 75 times the size of the city's corporate limits. ◄◄



Highway loop around Lubbock, Texas.


Design...Engineering...Economy
TEXANS TAKE TO MONOTUBE ALUMINUM POLES IN A BIG WAY!
Nearly 1000 modern Monotube aluminum poles are installed on the 30-mile Dallas-Fort Worth Turnpike. Union Metal Highway Sign Supports and Antenna Poles are also used along this superhighway.
UNION METAL
Monotube Engineered Lighting Poles
The UNION METAL Manufacturing Company
Canton 5, Ohio
Brampton, Ontario

Modern Lights on Every Cicero Street

Austin Boulevard looking south from Cermak Road. Anthony J. Zelenka & Associates, Cicero, were responsible for the design and planning of Cicero's lighting project.

Alleys were lighted last with 900 to 1,000 lights.

By **JERRY F. JUSTIN**
President, Cicero, Ill.

One of the first municipalities in this area to use mercury vapor lights, for many years Cicero, Ill., has recognized the value of good lighting. The first mercury was installed on Cicero's streets in 1939.

In the beginning they were installed by the town's own electrical department on a pay-as-you-go basis on the main thoroughfares. This brought about the lighting of the community's main streets and those locations believed to require better than average lighting for safety's sake. Over 1,000 mercury-vapor lights were installed in this manner.

However, as the advantages of good lighting became increasingly apparent, town officials cast about for the means to make possible the modernization of the entire lighting system so that every single street in the town would be well lighted. Experience had shown that it was in the town's interests to give its residents the immediate benefits of good lighting. These benefits are easier and safer movement of both vehicular and pedestrian traffic and better policing. Police reported that visibility on well lighted streets increased their efficiency markedly and comparisons of sections lighted showed a better record as far as crime was concerned in well lighted areas over the areas where new lighting had not been installed.

Complete modernization would require 2,500 lights; the installation cost would be $2,000,000.

Cicero is a part of greater Chicago, and has such heavy traffic that all of its streets qualify as arterial streets. In Illinois a portion of the state motor fuel tax funds collected is turned over to the municipalities for the improvement and maintenance of such designated arterial streets.

In several previous street improvement projects, Cicero had secured the approval of the Illinois State Department of Highways to include street lighting in street improvement plans. Cicero was perhaps the first community in the state to do this.

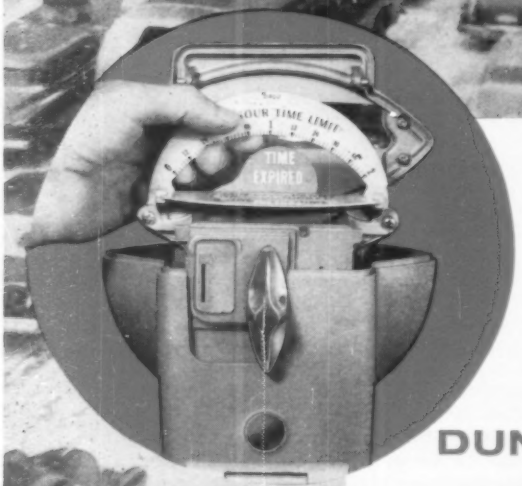
In seeking a means of financing and making possible the town's lighting project it was, therefore, natural to look to the possibility of using the town's share of the motor fuel tax funds to help in the installation of the lighting system as well as for street improvement.

The state indicated it would approve if certain conditions were met. These conditions included bringing up the roadways of certain streets to acceptable standards and the setting up of long range programs to include the continued maintenance of roadways to acceptable standards. These conditions required, and would continue to require, the expenditure of substantial portions of state motor fuel tax funds; but it was

(Continued on page 119)

EVERYONE TALKS ABOUT THE WEATHER...

...but DUNCAN performance is unaffected!



Specifically engineered and tested to take the severest of inclement weather in stride. Duncan "heavy-duty" meters offer low-cost, efficient parking control regardless of the season.

"Three-second" lift out mechanism provides for the fastest mechanism exchange possible, greatly facilitating maintenance programs under all conditions.

"Hundreds of cities have traded their "fair-weather" meters for "all-weather" Duncans. Check the operation of your city's installation today.

DUNCAN PARKING METER

DIVISION OF NAUTEC CORPORATION

835 NO. WOOD STREET • CHICAGO 22, ILLINOIS

Congratulations CICERO On The NEW STREET LIGHTS!

THE NEW STREET LIGHTS ON CERMAK ROAD IN CICERO

Part of an advertising page inserted by local businessmen in Cicero's newspaper, The Life.

(Continued from page 117)

found that through careful management, the installation of the lighting system would also be possible by paying for it through a bond issue to be paid off through anticipated motor fuel tax funds over a period of years.

Public Approval

But in order to make possible the issue of bonds to raise the funds, it was necessary to hold a referendum to allow the people of Cicero to vote and approve the installation of the system. This was necessary to protect the bond issue in the event motor fuel taxes were discontinued by the state or were inadequate to make principal and interest payments over the 20-year period for which the bonds were issued. The referendum was overwhelmingly passed after the story of the lighting project was carried to the people.

On passage of the referendum, plans were drawn, state approval of them was secured and the town advertised for bids. Work was then begun in the early fall of 1959.

Well accepted by residents and the town's commercial establishments, the system is divided into some 65 circuits to minimize blackouts due to maintenance or failures. 6,000 and 25,000 lumen lamps were used in the installation.

A Thousand Alley Lights

So effective has this lighting been and so well has it been received that it was possible to take a step further in lighting. The street lighting now in, officials eyed the many alleys in the community which now, in contrast, were dark areas. Believing that lighting these would also be of value in increasing the safety and well being of residents, means were sought to install lights in alleys.

The installation of a new system of poles and lights was not deemed feasible because of its cost. But officials noted that utility poles which carried electric and telephone wires already stood in all alleys.

While it was not possible to secure agreement to mount town-owned brackets and lights, an agreement was secured with the Public Service Co. of Northern Illinois to provide the necessary lights on a monthly rental basis of $3.30 per light.

For this sum the Public Service Co. would not only allow the use of its poles and wiring, but would install brackets and lights, maintain them and provide the necessary electrical energy.

This agreement made unnecessary a capital outlay, which would have been prohibitive considering the cost of poles, lights, installation, maintenance and electrical energy as well as interest and amortization costs, and made the installation of alley lighting possible.

At present pilot installations in alleys in various sections of the town have been made to work out all details. Their success indicates that the alley-lighting program will be completed as rapidly as Public Service crews can complete installation.

At least two lights per block are being used in each alley. Special prismatic lenses deflect the light in a pattern along the length of the alley. Each light is equipped with a photo-electric switch which turns on the light during any period of darkness including even daylight periods of fog or darkness. Some 900 to 1,000 lights will be installed under this program when completed.

With the lights originally installed by the town, the lights installed in the recent lighting program, the alley lights and the number of lights which will still be installed, Cicero will have a total of 3923 lights in its 5.5 square mile area. This means Cicero will be lighted with an average of 909 lights per square mile. Luminaires are Westinghouse and new poles are Pfaff & Kendall aluminum standards. ◄◄

The admiring group facing a freshly unpacked fluorescent luminaire are, left to right, City Manager Julian F. Hirst; Mayor John W. Schultz; Jack Zachary of the Retail Merchants' Association; Irving R. McGhee, traffic and planning engineer; Dudley Wells of the Retail Merchants' Association; and Thomas W. Wright, director of the Electric Department.

Light Doubled and Redoubled

The street-lighting program for the City of Martinsville, Va., began in 1954. Before this time no program had been established governing the type and size of luminaires to be installed on the city streets. The 1954 program set forth these specifications and established a plan to bring all presently lighted streets up to Illuminating Engineering Society standards.

The plan included 78 General Electric 406 fluorescent luminaires for the downtown streets. The suburban area lighting was to be supplemented or replaced by G. E., Line Material or Joslyn incandescent luminaires.

It has been the policy of the city to replace, where possible, series lighting with multiple luminaires, controlled by photoelectric cell. To date seven individually controlled incandescent fixtures have been installed on a trial basis.

The tabulated schedule shows that the 11-year program will quadruple the lighting of the city of Martinville.

No mercury vapor luminaires have been installed under this program because it was felt that the appropriation for street lighting could be used more effectively in the purchase of incandescent and fluorescent fixtures.

ROBERT J. SMITH
Engineer
Electric Department

Lest We Forget

In 1879, Charles F. Brush, the inventor of the arc light, marked the end of one lighting era and the beginning of another, by staging an experimental demonstration in Cleveland, Ohio's Public Square, as the Street and Highway Safety Lighting Bulletin reminds us in a 24-page booklet, "Guide to Night-time Highway Safety."

Thousands of people assembled to see if the 12 lamps mounted on 150-foot standards with 2,000-candlepower in each, would really work. At five minutes to eight, there was a flicker of light and then wonder of wonders, all the lights blazed. The famous Cleveland Grays Band began to play and a detachment of artillery on the lake shore fired a salute.

Although lights and lighting systems did not for many years approach the present-day equipment, citizens realized that the streets were safer from criminals with such lighting. Businessmen found that lighting kept their towns "alive" after sunset.

With the invention of the automobile, lighting began its tremendous part in saving lives at night. As more and more cars appeared on the nation's streets and highways, the number of traffic deaths climbed to a plateau of 40,000 lives a year lost.

The automobile was an historical step in America's economy, but it wasn't long before city and state officials, as well as civic-minded citizens, recognized that, while death on highways and streets was inevitable, they must seek ways and means to reduce the tolls.

Numerous surveys proved that the most dangerous time to drive a car was at night. More persons died in auto accidents at night than during the day, despite the fact that daytime traffic was much heavier.

It wasn't until well into the 20th century, when two cars in every garage was more than a national joke, that the vital need for highway lighting became evident.

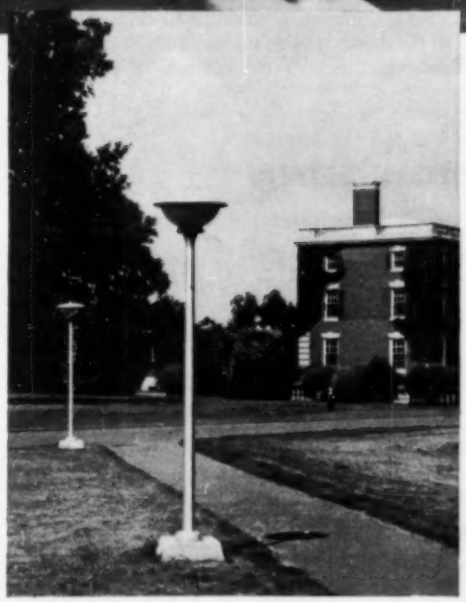
Bigger and better roads were constructed to carry the new volumes. Americans were being "knocked off" like flies. Even the safest drivers were losing their lives, especially at night.

Lighting was installed at hazardous locations on some highways. Soon there was a noticeable decrease in traffic accidents at the newly-illuminated spots. For instance, on U. S. Route 40 near Indianapolis, traffic and police officials found that a large number of accidents were occurring at and near the intersection of U. S. 40 and state Route 100, east of Indianapolis. Lighting was installed as officials conducted a two-year study of traffic accidents and fatalities on the three-mile stretch of road. This study showed that after-dark accidents dropped from 100 to 63 following completion of the lighting system. Daytime accidents, on the other hand, remained about the same, 140 to 138. Property loss dropped from $77,753 to $57,140. ◄◄

P & K OUTDOOR LIGHTING REPORT

the Modern Trend in LOW LEVEL LIGHTING

P&K CIRCLElux DAVITS AND POSTS



TOP PHOTO: Location: Rath Park, Franklin Square, L. I., N. Y.
Architect: Herbert D. Phillips
Consulting Engineers: Barstow, Mulligan & Vollmer
LOWER PHOTO: Location: Fairleigh Dickinson University, Madison, N. J.
Electrical Consultant: H. L. Sykes

modern lighting at a realistic cost

Here are two contemporary outdoor lighting installations – one an all new municipal swimming pool and recreational area – the other, a prominent New Jersey University. Both chose the P&K all aluminum CIRCLElux lighting package to illuminate and compliment their roadways, walkways, landscape and architecture.

The sweeping lines of the P&K CIRCLElux davit blend with the modern one story architecture of the Rath Park Swimming Pool. Yet, the modern, but stately, design of the P&K CIRCLElux post is in good taste with the traditional architecture of Fairleigh Dickinson University. The CIRCLElux lighting package is the correct low level lighting choice to compliment almost all types of architecture.

The P&K CIRCLElux is available in a wide range of davit styles and mounting heights. The post is available in one basic design but at various mounting heights and with the CIRCLElux you have a choice of three light sources – incandescent, mercury vapor and fluorescent. This combination of luminaires and davits or posts will enable you to specify "packaged" lighting units. This means easier specifying by using matched components which in turn can customize your lighting projects.

Send in your reservation now for the *new* CIRCLElux catalog.

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BRANCH SALES OFFICE: SAN JOSE, CALIFORNIA
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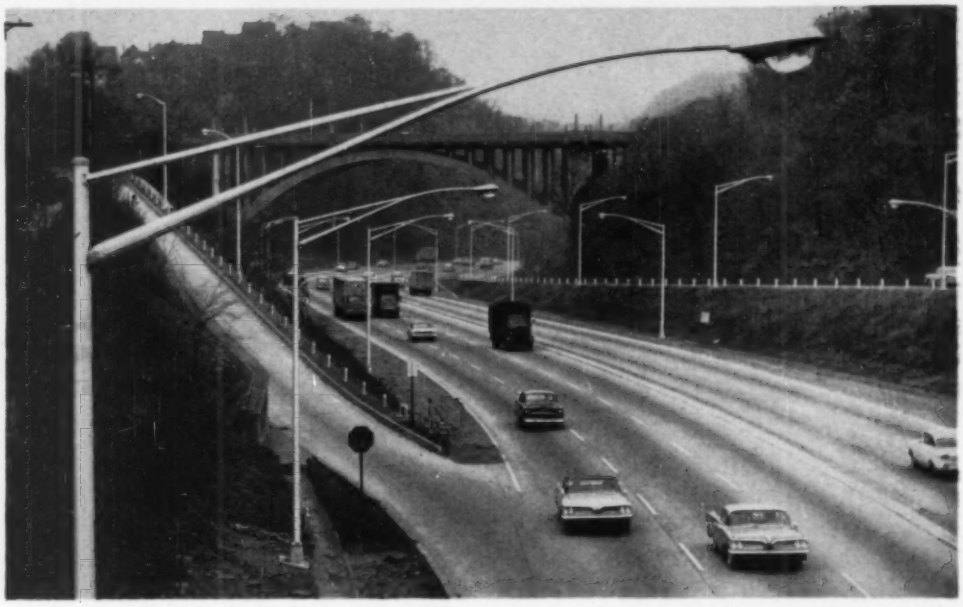


They save lives at night.

You Could Call This Alumination

With 24 aluminum standards within easy sight in this Alcoa picture, it's a great day for aluminum on Pittsburgh's Penn-Lincoln Parkway. There are actually 500 of them in the installation.

The light standards, bases and accessories were fabricated by the Hubbard Aluminum Products Co., Pittsburgh, of metal supplied by the Aluminum Company of America and were erected by the Daniels Electric Equipment Co., Pittsburgh.

Pole shafts range from 29 feet 4 inches, to 31 feet in height. They diminish gracefully in diameter from 8 inches at the base to 4½ inches at the peak. The curved, upsweep bracket-arm spreads from 6 to 15 feet. ◄◄

More About Alhambra's Median Strip

West Main Street in Alhambra, Calif., has been improved by further widening this already exceptionally wide boulevard, as told in THE AMERICAN CITY for May 1960. Some further data can now be supplied.

The new lighting is provided by 20,000-lumen mercury vapor luminaires mounted on twin eight-foot pendant arms on 30-foot reinforced-concrete lighting standards, fabricated by the Marbelite Division of the Pacific Union Metal Co.

The standards are spaced in the center of the median strip on approximately 160-foot centers, together with twin 4,000-lumen incandescent units at the outer curbs. The average illumination intensity at pavement level is 0.5 footcandle.

The traffic signal system in conjunction with the one-way traffic routing of West Main Street was changed from a three-phase to a two-phase system, with additional positive signal indication provided by "mast-arming" the traffic signals. Additional indications are provided the pedestrians by the installation of pedestrian signals to regulate and restrict the stragglers across these wide roadways.

Due to the unequal width of Main Street on one side of Fremont Avenue, as compared with the other side, additional mast-arm traffic signals were installed, both far right and far left, for westbound Main Street traffic.

Traffic signals, signal controller and pedestrian signals were furnished by A-1 Signal Co. of Alhambra and Econolite Co. of Los Angeles. The traffic signals were mounted on specially designed poles manufactured by the Marbelite Division of the Pacific Union Metal Co. of Los Angeles, and the installation and erection was performed by the Lighting and Signal Division of the City of Alhambra.

ALLEN B. STEPHENSON, *City Manager*
and ROBERT J. COLPETTS, *Traffic Engineer*

Vancouver's Five-Year Plan

Vancouver, B. C., Canada, has a five-year street-lighting plan to cost around $400,000 a year. This year should see 2,000 mercury vapor units installed.

In the residential areas, the lights are 250-watt lamps mounted on six-foot mast-arms, 25 feet high on tapered steel poles, 150 to 170 feet apart.

On the principal streets, the lamps will be 400-watt on six-foot arms 30 feet high on tapered steel davit-type poles. ◄◄

NOW...

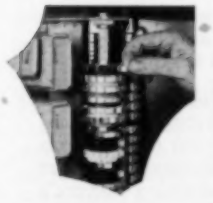
the world's most advanced vehicle-actuated

ELECTRONIC TRAFFIC CONTROLLERS

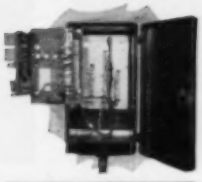
CROUSE/HINDS Vehicle-Actuated Electronic Traffic Controllers are designed to provide the choice of basic controller and accessories that will give you the most efficient command of any specific intersection. There is a choice of 3 basic controllers to meet the needs of any intersection, with provision for future modifications built in.

ONE OR MORE PLUG-IN ACCESSORIES expand functions of basic controller, without change in main timer, or addition of relays. Front of each unit has disconnect plug for easy removal.

COMPLETE RANGE OF TIE-IN and Modifying Accessories provides all operations called for by engineers coping with today's traffic complexities. (All are compatible with existing systems.)



CAMSHAFT CONSTRUCTION reduces number of relays to *minimum* . . . permits a wider range of modifications before resorting to special accessories . . . without changes in timer or wiring.



"OPEN BOOK" CONSTRUCTION of Crouse-Hinds Controllers gives ready accessibility for all maintenance, installation and adjustment procedures.

ONE BASIC TIMER with one standard set of wiring handles all jobs. All modifications not made by simple cam adjustment are obtained by plug-in accessories without complicated rewiring.

JACK-MOUNTED RELAYS eliminates wiring for replacement. Just pull relay from jack and slip in new relay. Fewer number of relays reduces maintenance headaches to a mere fraction.

COMPLETE TECHNICAL INFORMATION on the Crouse-Hinds series of Vehicle-Actuated Electronic Traffic Controllers is yours at the drop of a postcard. Literature by return mail.

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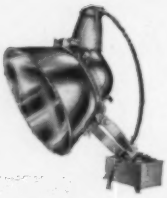
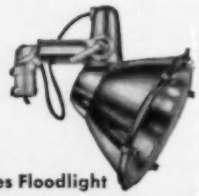


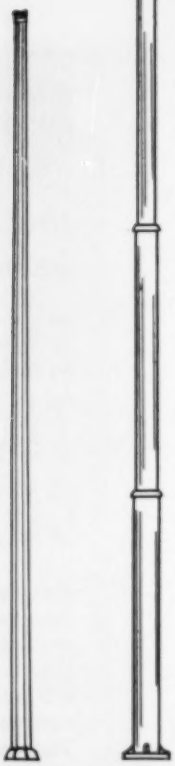
2000 Series Floodlight

3800 Series Floodlight



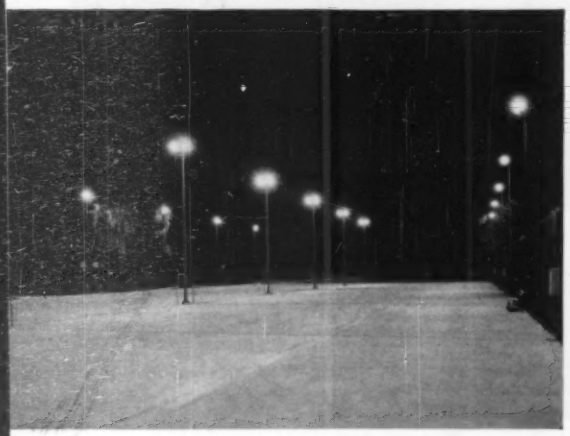
4200 Series Floodlight

199-D Series Hinged Pole



560 Series Rigid Pole

115 Series Rigid Pole



Revere's wide line of fixtures lets you light sports areas the one best way for each job

You don't have to shop around for components required to light outdoor sports areas the one best way for each application. Just plan your work the way you know the job should be done, then call on your Revere wholesaler. Whatever outdoor lighting equipment your plans call for, he can supply it from Revere's complete line, without substituting components which may be less than best for the job.

Whether you need hinged or rigid poles . . . mercury, incandescent or fluorescent luminaires . . . floodlights, fixtures and fittings—Revere has them all, *structurally* matched for strength, balance and perfect fit; *design* matched for peak lighting efficiency and best appearance. Installation is fast, easy, trouble-free.

Ordering all equipment from your Revere wholesaler simplifies paperwork and assures delivery of all components to your job site according to your construction schedule. See him about Revere fixtures for your next job. Write to us for a catalog showing Revere's complete line of outdoor lighting equipment.

Revere ELECTRIC MFG. CO.

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Revere Electric Mfg. Co. • 7420 Lehigh Avenue • Chicago 48, Illinois (In suburban Niles)

Long Distance Phone: NIles 7-6060 • Chicago Phone: SPring 4-1200 • Telegrams: WUX Niles

In Canada: Curtis Lighting, Ltd., Leaside, Toronto, Ontario

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

A handshake from the city isn't expensive

A "Welcome Newcomer" Publication Is an MPR Opportunity for 1961

"I never knew anything about my home town, couldn't have told you the night our city council met if I tried. But, when I moved here . . . well, Tom and I got interested from the very first day!" That was the day the City of Alton, Ill., sent new resident Anne R. and her husband its message of welcome.

A first, and firm, handshake from the city to newcomers is a public relations opportunity that costs the city pennies. It can build new-citizen interest, pride, and cooperation worth dollars.

Alton's residents are sent an 11x 17-inch pamphlet, folded three times to business-letter size. It is printed in blue ink on white paper, utilizes the city seal and line drawings and tells new people exactly what they want—and need—to know about the city. The folder also gives Mayor P. W. Day, City Manager Graham W. Watt, the city councilmen, and nineteen other city officials (listed by name and job in the publication) a chance to say, "We're glad to have you with us." More important, Alton, via the newcomer sheet, invites newcomers to council meetings, to other city events, to community affairs, to participate in local elections, etc. and asks them to cooperate with local rules, regulations, and laws.

Printed initially to welcome persons in areas annexed to the City of Alton, the folder is equally useful for persons moving into the community.

Handsomer (and more expensive) is the cordial welcome booklet of Milwaukee, Wis., Milwaukee is Yours!" This 8x5-inch publication, 16 pages plus cover, tells the new resident just what sort of a city Milwaukee is.

Wichita, Kans., strikes a friendly, informal note with a page titled, "We're listening." It invites newcomers to make suggestions and complaints to city hall and to ask questions of city hall. The Wichita folder tells new people something of its history, the city government organization (via chart), ordinances of importance, the agenda for city board meetings, and municipal taxes. Also notable in the Wichita folder, "Around Town," which locates public buildings and parks—information too often overlooked in booklets written by people so familiar with the locations they forget to tell others.

Hopkins, Minn., lists emergency phone numbers to be clipped and pasted in the phone book. And there's a paragraph and phone number listed for each of the city's services—police, fire, water and sewer, garbage, streets, library, and recreation. The same information is also given for local elections.

Phoenix, Ariz., which has grown so fast it's had a hard time keeping up with the new residents, sends a mimeographed letter to them on arrival. Feature: a space to figure individual or family costs in Phoenix, or—in the case of annexees—savings because of annexation to the city.

In many cities, the "Welcome Wagon"—operating in cooperation with local merchants and businessmen—provides a hostess who calls on newcomers, presents gifts from local businesses, and answers questions put to her by the newcomers. The "welcome packet" presented at this time may include a letter, brochure, city telephone directory, or other items from the city government.

Rockville, Md., is one of many cities where newcomers are greeted by the "Welcome Wagon." Included in the packet presented by the hostess is a multilithed pamphlet from Mayor Alexander J. Greene, Manager Walter A. Scheiber, and the council and other members of the city staff.

Rockville encourages newcomer participation by telling them, we're "proud of the quantity and quality of city participation in community affairs. You will find your neighbors, by and large, to be politically alert and active in a variety of municipal functions." Of interest: the Rockville brochure not only describes functions of the city, it makes a point of telling newcomers what the city *does not* do (i. e. maintain a municipal garbage service, issue wedding licenses or birth certificates, operate a school system, or maintain a "full police force").

Western Springs, Ill., prints its welcome folder on "very stiff paper so that it can be used as a ready reference in the telephone directory or on the telephone table. Being of substantial weight, it is not apt to get torn or crumpled up easily." The folder was provided originally to all citizens, the city using a water utility customer listing for its mailing. The folder is now given to new persons when they come into the water department for service. Copies are also given to the "Welcome Wagon" for distribution to people who

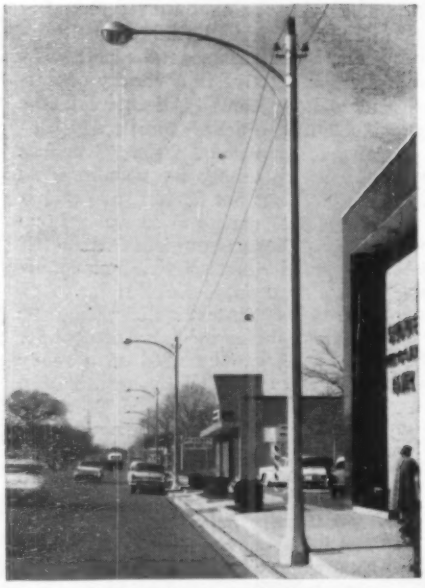
(Continued on page 127)

First step—spot the post hole digger and let the dirt fly. Stress-Spun standards, with butt foundation, eliminate the need for costly, troublesome cast-in-field foundations.

Next, pick up the Hy-Lite pole with a rope sling and set in the hole. Any pole line truck or crane will handle the job with ease. Then align the pole in a vertical position.

Finally, backfill around the butt foundation with fine crushed stone. Wet, then tamp. Total setting time—14 minutes... ready for all electrical work.

SET IN LESS THAN 15 MINUTES



Finished Hy-Lite installation—attractive appearance and daylight safety around the clock.

The easy, low cost DRILL, SET, TAMP method of installation helps make Hy-Lites your best lighting pole buy.

Take time to request Catalog No. 400. It will give you details on the wide range of attractive Hy-Lite designs and the many plus advantages of prestressed concrete standards. Address the American Concrete Corporation, 5092 North Kimberly Avenue, Chicago 30, Illinois.

American Concrete

STRESS-SPUN HY-LITE LIGHTING STANDARDS

(Continued from page 125)

are not on the utility mailing list.

Newcomer publications are a way for a city to do these things:

- **welcome new citizens**
- **tell them about the city**
- **show the newcomer how he "fits in"**

And, if the city's publication is the only item provided the newcomer, it may also list non-government services and facilities available in the community (theaters, other places of entertainment, shopping places, investment potential—etc.).

Q. *What should be included in the welcome item?*

A. A word of welcome from the city (mayor, manager, council, and city staff); a brief description of city services, the name of the manager or official operating each, and a telephone number to call for service or information; city regulations, especially those affecting a household (regulations concerning dogs, garbage cans, building or remodeling a house), automobile registration and related matters; something about the tax rate and how it is applied and how tax money is used; mention of a special city operation, goal, or historical first.

Q. *What format is best for such a publication?*

A. As long as the publication is attractive, easy to read and understand, and in a "handy form" for citizen use, any format is suitable. For example, any of these can be effective: personal letter, folder or brochure, calendar of community events, booklet or magazine, telephone listing (to be pasted into phone book or retained near the telephone), invitation—to an open house, council meeting, or other community event — with a word about the city and its interest in newcomers.

Q. *Who should write it?*

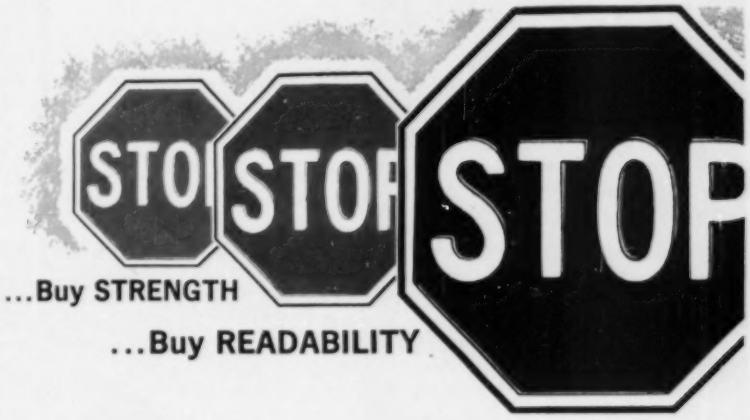
A. A member of your public relations staff, an administrative assistant, an information specialist. If there's no one on the city staff to do the job, you might farm it out to a local reporter, a local teacher or student; or a class of high schoolers might do it as a "project" in civics or government courses.

Q. *Where can illustrations be obtained?*

A. Local photographers, a police photographer, an amateur club may be the source of excellent photographs. Art (drawings, charts, etc.) can often be adequately done by someone on the city engineering staff. Nearly all printers maintain stock cuts; offset printers have "clip sheets" of line drawings, on hundreds of subjects, which clients may use.

Q. *What will it cost?*

A. Perhaps a welcome item should be held to a 10-cents-a-copy cost . . . unless the city council sees a handsome, full-colored welcome booklet; wants one like it, and is willing to appropriate the money! When the city wishes to make such a publication an item for "old" as well as "new" residents (in lieu of a report or as a first annual report), the cost figure might be considerably higher than the 10-cent limit suggested. Printing costs, of course, are up to your local printer. Remember, costs go down when quantity printing is done. So the small city would do well to create a welcome folder *without* names, so that it can be used for years, through changes of personnel. One way to achieve a personal touch: have the mayor *sign* each copy. ◄◄



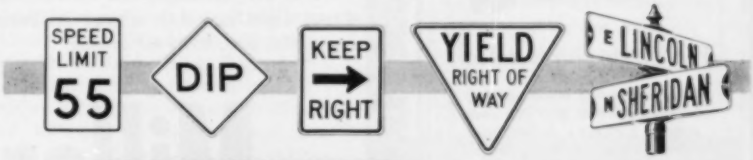
...Buy STRENGTH

...Buy READABILITY

...Buy DURABILITY

...BUY EMBOSSED MIRO-FLEX SIGNS!

Uniformity . . . uniformity of strength, readability, and durability is the key to economical signing without compromising quality. Miro-Flex embossed signs are the answer. These tough, weather-resistant signs offer snap-out legibility of raised lettering with baked-enamel finish. Extra strength and rigidity bring a standard of uncompromised quality to the traffic control sign field. Reflectorized signs also available with moisture-proof beads, reflective sheeting, or plastic lenses. Made of zinc-coated, Bonderized steel, Miro-Flex sells the best sign on the market. Stop, buy strength — Stop, buy readability — Stop, buy durability. Competitive makes are . . . rarely as attractive . . . never so enduring.



THE MIRO-FLEX CO., INC. 1824 E. SECOND ST. WICHITA 14, KANSAS

MS-761

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.

At Interstate Freeway Interchange . . .

Long span, double-rigid, Millerbernd standards help assure smooth after-dark traffic flow

We invite consultation

Our design and manufacturing facilities can help you with your special problems. Millerbernd experience covers the field . . . highway and street lighting; overhead sign supports; floodlight towers; parking lot, driveway and walkway lighting. Write or call.

These long-span standards light both edges of the roadway, make freeway exits, entrances and direction signs stand out clearly. Motorists can see the whole of the interchange at a safe distance, permitting turn-offs without dangerous hesitation.

Millerbernd long span design is doubly rigid, holds luminaires rock steady . . . and it's handsome, too. Curved steel tube brace eliminates unsightly tie-rods. Long-span arms are available in lengths from 10 to 15 feet.

Get all the facts on Millerbernd standards for highway and street lighting. Ask about Millerbernd Octa-Tube overhead sign supports, too. ***Write for catalog.***

Millerbernd

MANUFACTURING CO.
WINSTED 1, MINNESOTA

Public Purchasing Executives, Beware

By A. L. LEHRBAUMMER
City Purchasing Agent
Milwaukee, Wis.

Perhaps the safeguards used in public-buying procedures ward off "fast deals." However, a resurgence of racketeering on industrial purchasing agents is being widely publicized.

While many of us are veterans, our assistants may be young buyers who should become familiar with such goings on.

One of the crudest operations I have ever heard involved an industrial purchasing agent for whom I cannot feel much compassion. He was offered a high grade of carbon tool steel at a low price from a foreign company. He signed the order, which was printed in a foreign language, where the salesman told him to. Instead of receiving the small quantity he required, an entire carload was delivered to him.

A few years ago, we were encouraged by several aldermen to purchase automotive batteries with a lifetime guarantee. These cost three times more than the batteries we were buying on a blanket yearly contract. Our first consideration was to determine the background of the firms who were extending this lifetime guarantee. This, after all, is a long time and all inclusive. The Dun and Bradstreet report revealed that one of these firms had been in business six months, the other had a record of venturing in all sorts of endeavors over the past several years, with an average business stand in each of about six months—such stability for lifetime guarantees! You wonder where these people would be even three or five years from now.

Guarantees Generally

All of you, I am sure, have been approached on additives to prolong the life of automotive batteries. Prevalent, too, are all sorts of additives for gasoline, fuel oil, motor oil and occasionally coal. It is a good practice not to subscribe to the use of any of these until they are analyzed and approved by your testing laboratory or a technician in your organization. If these services are not available, seek references on their successful use from your Institute and fellow public buyers. There have been some bitter experiences in the use of additives and it shouldn't happen to you.

Speaking about references, we are all familiar with the firm who is insistent on having your agency place a trial or experimental order. If you don't, of course, you are not progressive. If you do, then a short while later their entire sales force is armed with photographic copies of your order, mounted in a plastic jacket.

In 1953 and 1954, "Tie-In Gift Deals" were appearing in various parts of the country. Our experience was in the janitorial supplies field. An employee of one of the Milwaukee hospitals was asked to sign an order of a Memphis firm for a 55-gallon drum of liquid cleaning compound. This, of course, without any price commitment or transportation arrangement. After signing the order, a form was to have been filled out and sent to the Gift Distribution Service of Memphis, Tenn., which assured that a three-way portable radio or a gift of equal value would be sent. Fortunately, the employee referred the offer to the Purchasing Department.

A complaint was registered with the Federal Trade Commission, Bureau of Anti-Deceptive Practices, under the assumption that it represented a bribe to public employees. The Commission referred the matter to the Department of Justice, who stated that the Federal Bribery Statutes relate to an offer, acceptance or solicitation of a bribe involving a Federal officer or employee only, and the matter was not pursued further.

A year ago all of the members of our Wisconsin Association of Public Purchasers received sales literature on anti-freeze, tire chains and other products from "Municipal Mutuals," who represented their firm as "A Mutual Purchasing Association—Organized by and for Wisconsin Municipal Officials." Their appeal was "Buy Better, Buy Together." At the top of the sales piece it described this organization as "A self-supporting well managed tax-paying association, neither asking for nor receiving any subsidies or concessions,

(Continued on page 131)

From a paper delivered at the National Institute of Governmental Purchasing Conference, Hotel Shoreham, Washington, D. C., October 26, 1960.

ALL NEW!
FULLY TRANSISTORIZED
Detectron
PIPE DETECTOR

In addition to the famous model "505" Detectron now offers its completely new model "808" with the first circuitry developed specifically for use with transistors. It is NOT merely an adaptation of earlier tube circuits.

Efficient under every known operating condition, effective in varying temperatures, thoroughly proven and trustworthy. Superior performance and reliability guaranteed.

EXCLUSIVE FEATURES

- ▲ Detects Deeper by all comparisons
- ▲ Automatic Switching for direct connection
- ▲ High Energy-Transfer-Ratio
- ▲ Printed Circuits, properly shielded
- ▲ Separate Oscillator System
- ▲ Highly Perfected Loop Antennas
- ▲ Economical Standard Long-Life Batteries
- ▲ Built-In Battery Testers
- ▲ Snap-Lok Connecting Handle
- ▲ Aluminum Cases for maximum protection

Written Lifetime Guarantee on CMC parts and workmanship

For specifications and prices, write for File No. AC-148

COMPUTER-MEASUREMENTS CO.
Utilities Instruments Div.
12970 BRADLEY, SYLMAR, CALIF.

Refuse Collector "Doubles" in Snow Removal

Dumpmaster clearing bridge prepares to empty snow scoop into its compaction body.

DEMPSTER-DUMPMASTER with Snow Scoop Performs Valuable Emergency Duty . . .

The DEMPSTER-DUMPMASTER, in service in most leading cities as a collector of containerized refuse or as a hand-loaded packer for trash and tree trimmings, now offers its owners still another valuable service. With the addition of a low-cost, snow-scoop container, the Dumpmaster becomes a highly efficient snow-removal device.

Taking up only one lane of traffic, the Dumpmaster moves along the curb, driving its snow scoop into the piled-up snow. When full, the scoop is lifted overhead and emptied into the compaction body hopper. Here, it is compressed by the 60,000-pound pressure of the packer plate, making room for bigger pay loads.

When full, the Dumpmaster proceeds to a nearby disposal point where it hydraulically ejects the huge icy cube that once was tons of traffic-clogging snow.

This type of versatility is just another reason that the Dumpmaster is your best buy in mechanized refuse collection.

Snow is dumped into compaction body.

Huge cube was once traffic-clogging snow.

DEMPSTER DUMPMASTER

Write Today for
FREE BROCHURE
DEMPSTER BROTHERS
Inc.
Dept. AC-2 Knoxville 17, Tenn.

(Continued from page 129)

deserving of public acceptance, mutual good will and reasonable profit."

None of the purchasing group members could shed any light on this organization. A request for investigation was placed with the Attorney General for the State of Wisconsin to determine whether this was a misrepresentation and a transgression on any ethics of good business procedure, and under Wisconsin's fraudulent advertising law, this false advertising and misrepresentation to Public Buying Agencies was nipped in the bud.

Some years ago, one of the bidders on our fireworks for the 4th of July celebration called via long-distance telephone regarding the results of the bids. In the conversation, he suggested that, as he deals direct and had no representative in our area, he would be very happy to have us designate someone to receive the 15% commission. He presumed that this inference to have someone's brother-in-law or some closely related firm take advantage of the commission as the authorized representative, would assure that the award would be made to him. We promptly told him that as far as we were concerned he could deal with us direct.

A Dollar For Dirt

One of the most interesting incidents we have had took place during the latter years of World War II. The Illinois Steel Company had abandoned their plant on Jones Island, a peninsula extending into Lake Michigan. After this tract was purchased by the City for Harbor purposes, a large pile of dirt or sand was left, which was undisturbed for many years. One day in 1943, a man came into the department and said that he would like to take some of that dirt for fill. But just to make it legal he would pay us $1 for whatever quantity he removed so that there would not be any question about it. The very next day, another man came in and said that he too was interested in removing some of this dirt and would pay us $10 for whatever quantity he required for his purpose.

This sudden activity, after it had lain unnoticed for many years, aroused our suspicions and we halted all removal. A sample was sent to the Testing Laboratory and the dirt was discovered to have a very high iron or ferric content. The sudden demand for the dirt and the high price such material brought because of the war effort, then was under-

(Continued on page 133)

For PAINLESS EXTRACTION of EXTRA REVENUE...

MI-CO PARKING METERS

Painless to users because fee is small for a valuable privilege. Painless to *you* because MI-CO Manual Meters pay for themselves fast, since their high quality and engineering, and a mere six moving parts, ensure uninterrupted service and steady income. All parts are clock brass, stainless steel, brass forgings or die castings. Meters adjustable to any number of hours, and 1c to 25c, with one coin slot. Twin Automatics also available. Before you buy, talk with Michaels, whose meters help regulate traffic in over 500 cities.

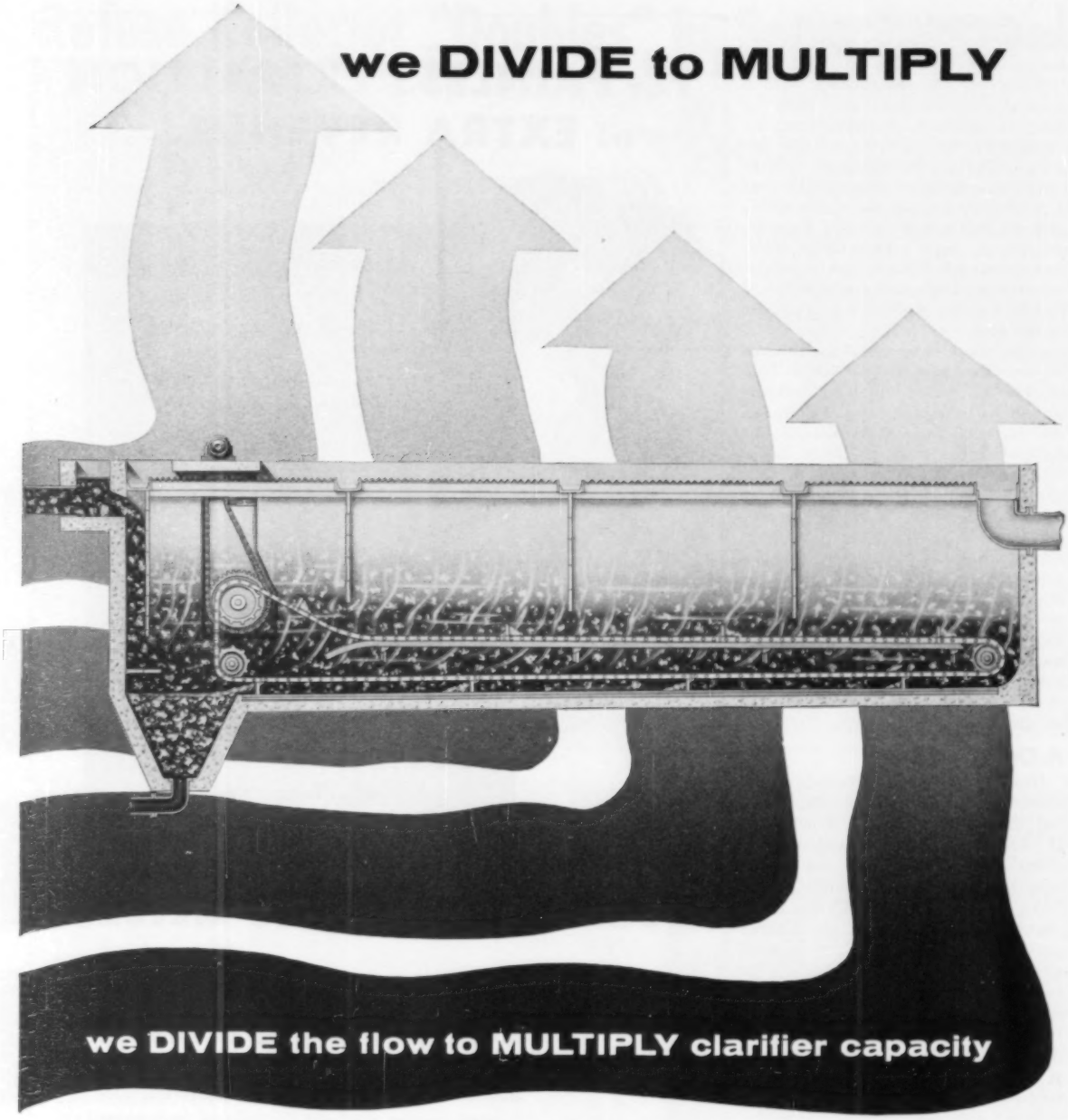
A Symbol of High Quality

MI-CO PARKING METERS, P. O. BOX 668-A, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., General Offices and Plant, Erlanger, Kentucky)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

we DIVIDE to MULTIPLY



we DIVIDE the flow to MULTIPLY clarifier capacity

Rex Verti-Flo not only increases the clarifying capacity of tanks up to four times; it provides a far clearer effluent. The savings in equipment and construction costs are obvious. Here's how Verti-Flo does it: The unique design of Rex Verti-Flo Clarifier transforms the conventional horizontal-flow tank into a vertical-flow tank...utilizing the *full volume* of the tank and *minimizing short-circuiting*. This is accomplished by a system of collecting troughs, weirs and partitioning baffles which divide the large, horizontal settling zone into a series of small, vertical-flow cells. To assure maximum flow length and control, the weirs are adjustable entirely around the periphery of each cell.

Installed in existing tanks, Verti-Flo can be at least double the capacity of the tank...in new installations, Verti-Flo provides up to four times more capacity so that smaller basins can be used with considerable savings in both equipment and construction costs.

For information, write CHAIN Belt Company, 4648 W. Greenfield Ave., Milwaukee 1, Wis.

REX®

CHAIN BELT COMPANY

(Continued from page 131)

standable. We took bids on the pile of dirt "as is and where is" and awarded on a high bid of somewhere in the neighborhood of $3,400. This pointed up again to us the old purchasing adage, to be sure about what you are buying and selling. Needless to say, there were two disappointed scrap dealers in the City of Milwaukee.

Junk Gyps

The weighing of scrap-hauling trucks, before and after being loaded, has a wide variety of tricks in order that more materials are received than paid for. Here are some of them:

1. The switching of unnumbered trucks may be attempted. Weighing in an empty heavy truck and then switching to a lighter truck to make the haul. To prevent this switching in Milwaukee, we note the state registry number and also the truck license plates, so that no switching is possible. In some instances, we have resorted to an identification chalk mark on the bottom of the truck, to assure the continued use and weighing of this vehicle. When there are consecutive loads, we insist that the empty truck be weighed after each load. Even taking on 40 or 50 gallons of gasoline can be manipulated to their advantage.

2. Carrying hidden extra weights between the truck chassis and the body at the time of the empty weigh-in is sometimes practiced. These are then removed before the truck is loaded and the compensatory weight in scrap is received by the dealer without payment. In some instances, they have even gone so far as weighing in with robust and heavy drivers and when loaded there was a puny fellow behind the wheel who drove up to the scale. We insist that the drivers vacate the truck at both weighings and also look for any heavy plates or steel bars.

3. Scales at the yards of scrap dealers can be easily manipulated in their favor. We issue a list of city-bonded scales to successful scrap dealers and insist on weight tickets from these locations. If no one accompanies the load of scrap, when the scale is located between the removal point and the scrap dealer's yard, there is a good chance that you are going to be taken.

4. When a scrap dealer uses containers such as boxes, drums or barrels for removal of scrap metals, be

(Continued on page 135)

INCINERATOR SELECTOR

A handy, pocket-size device, designed by our engineers to make life easier for you. Complicated computations are eliminated. At a glance you see the type and size Morse Boulger Incinerator Unit required for your specific job.

FREE

One of these tremendous time-savers will be sent free when requested on your professional or business stationery.

MORSE BOULGER INC.

Today's engineering plus more than 70 years experience building incinerators of all types and sizes.

80 FIFTH AVENUE
NEW YORK 11, N. Y. Dept. 22
REPRESENTATIVES EVERYWHERE

Member: Incinerator Institute of America
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NEW CATALOG!

WRITE TODAY FOR
100-PAGE
Municipal Supplies Catalog
SPECIFY YOUR TITLE ON YOUR REQUEST

W. S. DARLEY & CO.
CHICAGO 12

Build extra good will on fire calls!

MINIMIZE SMOKE AND WATER DAMAGE with
FULTON SHUREDRY GREEN-BAK SALVAGE COVERS!

You'll create a better public image of your fire department when you use Fulton Salvage Covers. Because these quality covers give property maximum protection from smoke and water damage, they signify an extra measure of care on the part of your firemen. This results in greater good will, support for your department and in valuable community relations.

Features of Fulton Salvage Covers: FINEST QUALITY TREATED DUCK • LIGHT, PLIABLE AND MILDEW RESISTANT • PRESSURE IMPREGNATED BY FULTON'S EXCLUSIVE "DRY-TREATMENT" • WATERPROOFED SEAMS • EASY TO HANDLE IN ANY TEMPERATURE

Fulton Salvage Covers meet the specifications of the National Board of Fire Underwriters, and are approved by Associated Factory Mutual Fire Insurance Companies.

Contact your fire equipment dealer or

Fulton COTTON MILLS

FULTON MANUFACTURES A COMPLETE LINE OF NYLON SALVAGE COVERS

P. O. BOX 1726 • ATLANTA 1, GEORGIA • TELEPHONE 688-1111 • TWX: AT 24

You **could** VOTE ON ADDING MACHINES! . . . and they **would** add correctly . . . BUT! . . . you would **not** have an accurate election . . . because adding machines are **not** AUTOMATIC VOTING MACHINES . . . which not only add votes immediately, accurately, reliably and safely . . . but which also prevent voter error and spoiled ballots . . . which prevent accidental or intentional ballot marking contrary to law . . . and most important, protect election integrity by assurance of ballot secrecy and full protection against fraud.

•

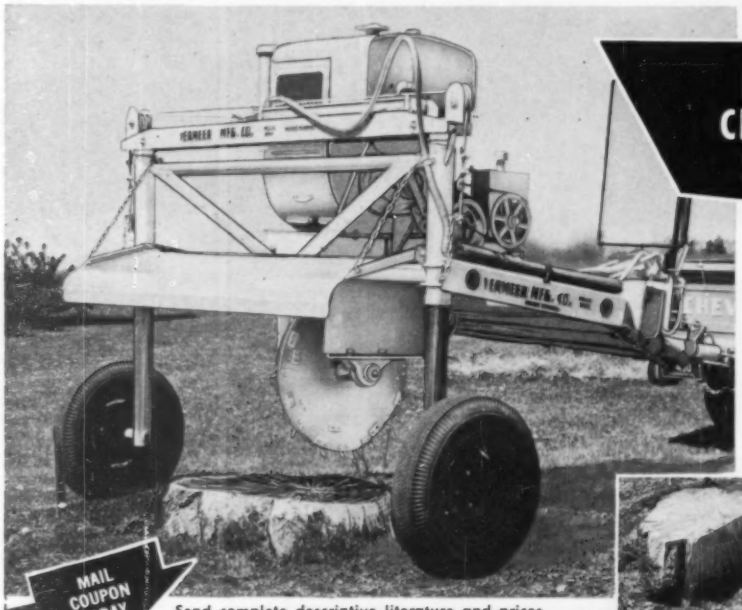
SIXTY-ONE CONTINUOUS YEARS OF ELECTION EXPERIENCE ARE BUILT INTO THIS AUTOMATIC VOTING MACHINE

PRODUCTS FOR THE PUBLIC GOOD

AUTOMATIC VOTING MACHINE

division of Rockwell Manufacturing Company

Jamestown, N. Y.



HERE'S HOW 800 CITIES SOLVED THEIR STUMP PROBLEM...

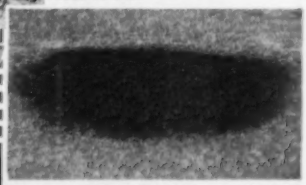
Original Low Cost VERMEER

POW-R-STUMP CUTTER

Rips Stump To Shreds In Minutes!

You'll save hundreds of back-breaking man-hours and thousands of dollars annually . . . with a Vermeer Pow-R-Stump Cutter. The choice of tree experts everywhere! It's the modern way, the economical way to remove ugly stumps. Mail the coupon for all the details . . . and a FREE demonstration.

Photos show how big revolving cutting wheel rips stump to chips . . . down to 10" below the ground. Dirt is replaced, chips removed and area is ready for seed or sod.



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Send complete descriptive literature and prices on your Pow-R-Stump Cutter to

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ADDRESS.....

CITY.....STATE.....

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(Continued from page 133)

sure that they are empty and properly weighed.

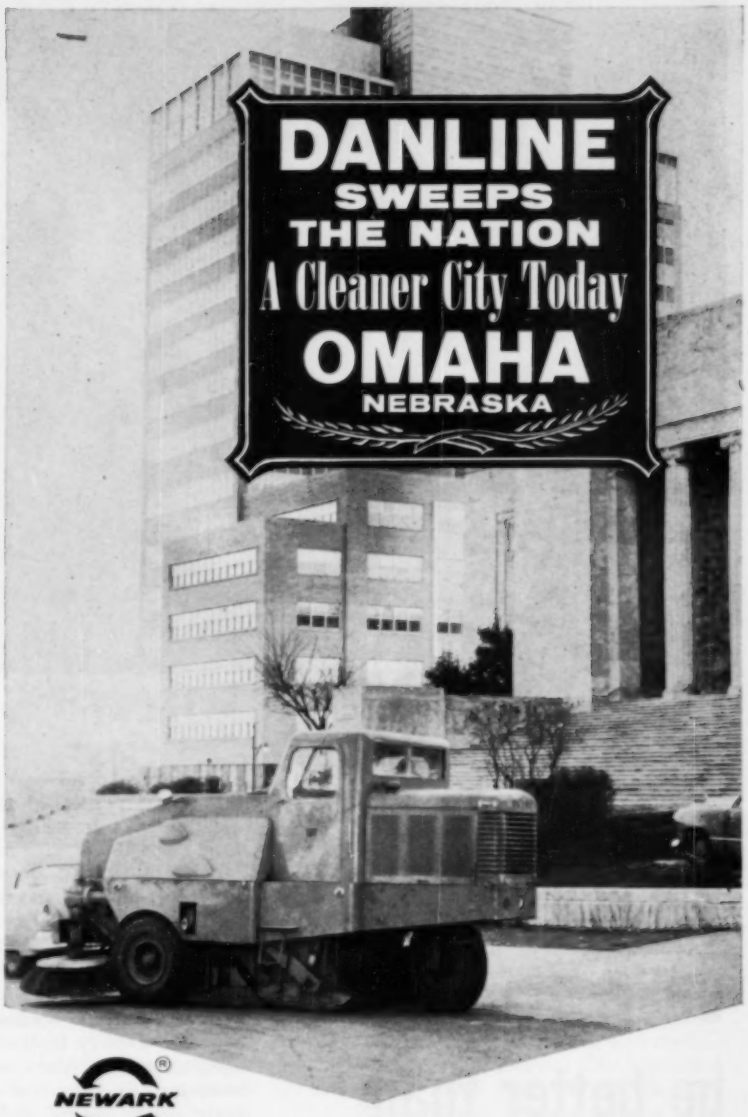
5. The city instructs each department to segregate their scrap so that the highest prices will be realized. When bids are requested, the dealers carefully inspect brass borings, brass and copper solids and the like with a magnet to detect the presence of any steel. They bid accordingly. Then when they are awarded the business for removal, they occassionally yell long and loud for adjustments on the pieces containing steel. Needless to say, no concessions or adjustments are made after their inspection.

These attempts to fleece the city have been encountered over a number of years. Our Salvage Division is headed by a veteran on the job, whose experience returns big dividends. The motto of our Salvage Division is "Be on your guard." The disposal of scrap and obsolete equipment is important in the administration of a public agency. ◄◄

Polygraph OKs Water Company Purchase

Polygraph lie-detector tests removed the last vestige of doubt that the purchase of the Dyke Water System by Garden Grove, Calif., was absolutely honest. The city purchased the company for $7,357,646, based on a comprehensive survey by independent consulting engineers.

Last July the city council voted to recommend that the council members and various municipal officials concerned with the proposed purchase submit to the test to determine if there were any hidden interests involved. The Orange County District Attorney's office administered the tests to five members of the city council, the city administrator, the city attorney, the finance director, the public worker director, and the water superintendent. The results indicated that none received any personal benefit from the purchase. ◄◄



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If your work involves a large percentage of widely scattered jobs, chances are you could speed up your services considerably with a "fleet" of mobile, utility tractors. Remember, you can buy *two or three* Case 430 *Utility* machines for the price of *one* larger, hard-to-move outfit. So, depending on how many units you need for *heavy* work, it will pay you to replace a few of your big rigs with a "fleet" of Case 430's. Thus the same investment will give you more equipment to work several projects at once . . . handle scattered service complaints fast . . . speed scheduled maintenance.

You also gain exceptional job versatility by choosing Case 430 *Utility* tractors. For example, you can specify 2 or 3 combination machines, equipped with backhoe and loader — for trenching, ditching and drainage installations. In addition, you might order several high-output loaders for stockpile and snow removal work. And maybe, a couple loader-mower tractors for alternate loading, mowing jobs. All machines, incidentally, can be fitted with *additional* quick-change loader-arm and rear-hitch attachments for added job flexibility.

Husky-built Case 430 provides strong dig-power for backhoe and loader work with *high-torque Case-built gasoline or diesel engine*. Powerful backhoe cuts 10′ deep, digs over 15′ from pivot, swings 180° with foot-pedal control for smooth, fast dig-and-dump. High-lift loader lifts up to 1200-lb payloads . . . discharges with 8′5″ clearance for quick dump-and-go. Tractor-loader works detachable hydraulic-controlled 6′ center-mounted rotary mower, or side-mount cutter-bar mower. *(Note:* If you want a larger 14′ backhoe and 2000 lb loader, specify Case Model 530.)

Try 'em free on your work. Find out how Case *Utility* tractors can give more and faster service with no increase in your budget. Call your Case Dealer now for free demonstration. Or write J. I. Case Co., Racine, Wis., Dept B1561 for specifications.

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Model 430 with Case-Danco 6′ center-mounted rotary mows ahead of rear wheels, to full tractor-width . . . cuts weeds and grasses low as 1″.

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The mayors' delegation gathers outside the Church of the Nativity, Bethlehem, Jordan, after the precedent-breaking trip from Israel to Jordan.

Touring U. S. Mayors

. . . attend International Urban Congress in Tel Aviv, break through a travel blockade between Israel and Jordan

By **WILLIAM S. FOSTER***
Editor
The American City

Some 50 or more U. S. mayors and other city officials, along with their wives, conducted their own good-will tour last month while attending the Tel Aviv meeting of IULA (International Union of Local Authorities), European equivalent of the American Municipal Association or the U. S. Conference of Mayors.

They returned impressed, but at the same time many were just a little annoyed. Said one of them, "I'm glad to see these countries make economic recoveries, and don't begrudge the fact that most of it is possible through U. S. dollars. But it does pain me to see all this money going abroad and not much more than a thin dime being spent to help rebuild our own cities."

The mayors took a 17-day "economy" tour that stopped in Rome, Athens, a week in Israel for the IULA meeting, Istanbul, and Paris. The group, led by business-like Mayor Don Hummel, Tucson, Ariz., president of the AMA, dutifully attended receptions by the mayors of each foreign city, arranged by the various U. S. legations.

At Rome, they learned that despite a vigorous Italian economic growth, the communist party still had gained strength, is being smartly run, and is kept out of power only through an uneasy coalition government. They also marveled at Rome's traffic jams, and the apparent irresponsibility of both motorists and pedestrians in the Eternal City. Quipped Mayor Bill Donham, Middletown, Ohio, "These rascals in these pint-sized cars are out to get themselves a pedestrian, and they all hit below the belt." Councilman Bob Jones,

(Continued on page 138)

Mayor Willi Brandt, West Berlin, presents the IULA flag to Dr. P. J. Oud, president of the international group, at the opening session in Tel Aviv.

* Mr. Foster accompanied the U. S. delegation of Mayors to the IULA meeting at Tel Aviv. As far as is currently known, he is the only U. S. journalist to make the trip from Israeli Jerusalem to Jordanian Jerusalem.

(Continued from page 137)

Seattle, observed that, "If Italy enjoys just a little more economic prosperity, traffic on these narrow streets won't move at all."

At the Athens reception, spry 78-year old Mayor Hannah Bonnet, New Smyrna Beach, Fla., found herself talking with the Mayor of Smyrna, Greece. In competent, grandmotherly fashion, she took him by the arm and said, "This is a good time for us to make one of those sister-city arrangements." Officials of Smyrna, Greece, agreed happily.

Mark Bortman, who heads the U. S. State Department's People-to-People section, beamed, as did other diplomatic officials from both nations.

The most revealing incident, showing how these mayors were determined to be good representatives of the United States, took place at Istanbul. They arrived bone-weary and wanting nothing more than a good night's sleep. But when they heard that the Mayor-Governor had arranged a reception and that the U. S. Embassy hoped for a good attendance, all of them turned out.

"Had a good time, too," said Nashville's Mayor Ben West.

In Israel, where the IULA meeting was being held, the pace was particularly rugged. The Israeli government had ambitiously arranged tours that took the delegates to Rehovot, Givat-Brenner, Ashkelon, Tel Aviv, Nazareth, Haifa, and Jerusalem, and then scheduled sessions for the late afternoon and evening. However, Mayor Don Hummell was insistent that the United States be represented at *every* session, no matter how minor. To insure this, he organized the U. S. delegation into teams and assigned sessions for each to attend.

On the one free day, Mayor Hummell gathered his band of Americans into an entourage that made the unprecedented and generally forbidden trip from Israeli Jerusalem, across no-man's-land, into Jordanian Jerusalem. Somewhat nervous but nonetheless highly pleased U. S. Legation officials met the group at the border and accompanied them on a tour of the usual sightseeing attractions and a reception. While no one pointed them out, the delegates had no trouble identifying the squalid Arab refugee camps that still remain and that add to the unrest in the Mid-East.

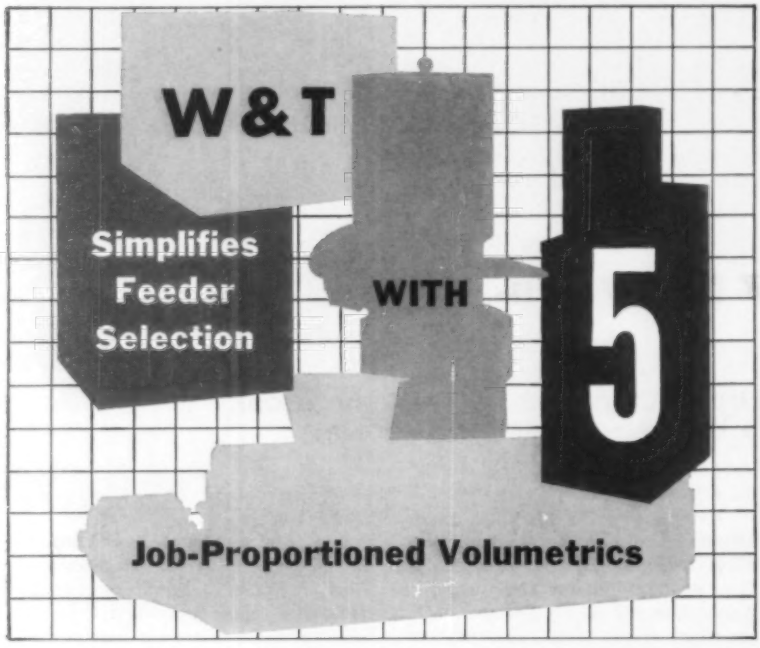
Tourists and businessmen can go freely from any Arab country into Israel, but until this trip, none has traveled directly from Israel to an Arab country. The only exceptions are prominent diplomatic officials and certain workers in the Jerusalem YMCA.

Snapped Mayor Hummell, "They told us that such a trip was impossible, which meant that there really was no problem at all. Mayors have been handed 'impossible' things to do for years, and have been getting them done."

"The reason we made it," reasoned tall, rangy Mayor Burton Adams, Pleasant Grove, Utah, "is that people over here think that mayors are important. It's an idea worth promoting."

One pertinent incident happened when a few Israeli mayors were questioning Kalamazoo's young, handsome Mayor Jim Gilmore about the presidential election. Mayor Gilmore freely admitted that he was a Nixon man and had worked for his election.

"But," Mayor Gilmore emphasized, raising a cautioning finger, Kennedy is now *my* president, and can expect my support. He will be president of the United States, not of the Democratic party." ◄◄



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Smoke floats across a schoolroom floor. A child screams, stumbles and falls into a doorway. Hysteria fills the hallways. Trampled bodies jam the exits. The fire's a roaring demon now consuming . . . consuming . . . consuming.

The story is not new. It happens in cities throughout our country . . . and each time it happens the public is shaken from its apathy. We are suddenly aware because the statistics are children now. But for how long will we be aware? The ugly truth is — an aroused citizenry is not aroused for long. And again tragedy waits for its opportunity — *our own short memories.*

How many lessons must we learn? 12,000 people died last year in fires — 2100 were children. Yes, these are "statistics". But each was a "loved one" to someone. *And the real tragedy is — all of the lives could have been saved.* Here's something you can do to prevent such needless tragedies . . .

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Desalted Sea Water Is No Bargain

. . . and will not be, in the foreseeable future; efficient re-use of water offers more promise of extending present supplies.

By **ABEL WOLMAN***
Johns Hopkins University
Baltimore, Md.

Although not containing as many dissolved solids as sea water, Coalinga's brackish water is made palatable by this four-stack demineralization unit.

Desalinization of sea water, (price $2 per 1,000 gallons) still cannot compete with fresh water where available (price 10 cents to 25 cents per 1,000 gallons). Although some localities presently use desalted sea water, the actual quantity used is inconsequential when compared to the total fresh-water use of the world. By 1965 probably no more than 70 million gallons of sea water a day will be converted to fresh water. This is about one third of today's water requirements in Baltimore alone.

Where fresh water is not available, however, sea-water or brackish-water conversion will be a necessity. For this reason the federal government has recently recognized that only minimum amounts of money have been spent heretofore in such research and has provided additional funds for the immediate future.

The interest in desalting saline waters has developed from the general assumption that our country will be confronted with severe water restrictions within a short period. Estimations predict that, by 1980, 560 billion gallons of water will be withdrawn from streams each day for irrigation, manufacturing, mining, steam electric power and municipal use. Most of this water will be returned to the stream for re-use, leaving about 120 billion gallons per day actually consumed. This is less than 11% of the average stream flows available.

Nevertheless, averages are no consolation to the communities and industries in water-short areas. Competition for water will result in the diversion of existing supplies to uses of higher value as has already been evidenced in the shifting from irrigation to industrial use in some parts of the United States.

Cost Factors

The federal government established certain price goals several years ago when it began its desalting research programs. It hoped to reach 38 cents per thousand gallons for municipal or domestic use and 12 cents for irrigation use, not including distribution. Although the production cost of desalting or demineralizing water has declined appreciably, no one now expects to reach these goals in the foreseeable future.

The 16 desalting plants presently in operation have an aggregate capacity of almost 15 million gallons per day and most use some form of distillation to provide the fresh water. Although costs have generally decreased—in fact to less than half what they were in the late 1930's—they still approximate $2 per thousand gallons. It is the hope of experts in this field that these costs can again be cut in half within the next five to ten years.

Coalinga, Calif., is presently demineralizing ground water containing almost 2,500 ppm of dissolved salts at a cost of $1.43 per thousand gallons. Formerly, the community imported water by truck, at a cost of $7.05 per thousand gallons. Researchers hope that the Coalinga experience will reveal a way to cut the present cost almost in half. Average sea water, however, contains 13 times as many salts as those being removed at Coalinga.

Processes other than distillation are still in experimental or pilot-plant form. Some experimenters believe that conversion costs for water comparable to that of Coalinga may be reduced to approximately $1 by the freezing process. It is necessary to realize, however, that this new process is still in the laboratory and pilot-plant stage.

Cost Comparisons

At present, municipal and industrial fresh-water supplies rarely cost in excess of 25 cents per thousand gallons exclusive of distribution and treatment. In the Los Angeles area production costs range from three to twenty cents. The Baltimore area finds its cost to be less than ten cents exclusive of filtration and distribution. Even including a 1,600-foot

(Continued on page 143)

* Dr. Wolman is Professor Emeritus of Sanitary Engineering at Johns Hopkins University. This analysis of desalinization draws from a paper he delivered before the Eastern Water Company Conference recently at Atlantic City, N. J.

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Solve them all with POWERIZED O'Brien EQUIPMENT

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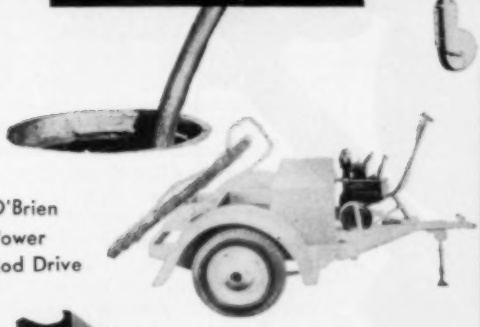
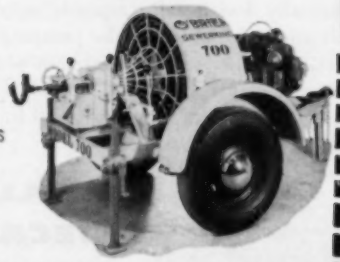


O'Brien Power Rod Drive

Bucket Machine and Dumper



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O'Brien makes a complete line of sewer cleaning equipment. Every unit is the exact answer to a specific cleaning requirement and reflects O'Brien's long experience and familiarity with the field. Economy, efficiency, and convenience of operation are built into every piece of equipment.

O'Brien Power Rodder:

matchless driving and pull-back power, unexcelled for bucket threading and general sewer maintenance. 1200 ft. capacity can be used with either $\frac{5}{16}$ or $\frac{3}{8}$-inch rod. Equipped with automatic safety throw-out, positive rod drive, and footage meter.

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featuring exclusive O'Brien hopper. Bucket dumps into hopper; after repeated bucket travel, full hopper is dumped into truck. Use of hopper eliminates truck and traffic tie-up during cleaning operation which relieves truck for many hours of other duties while hopper is being re-filled. 9 hp., 16 hp., and 25 hp. models available.

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heavy duty disc assembly that lasts and lasts!

Lever and Weight Type

. . . ideal for use in pump suction or discharge lines to cushion and reduce slamming and hammering. Lever may be positioned to speed up or slow down closing of disc. Weight is easily adjusted in field.

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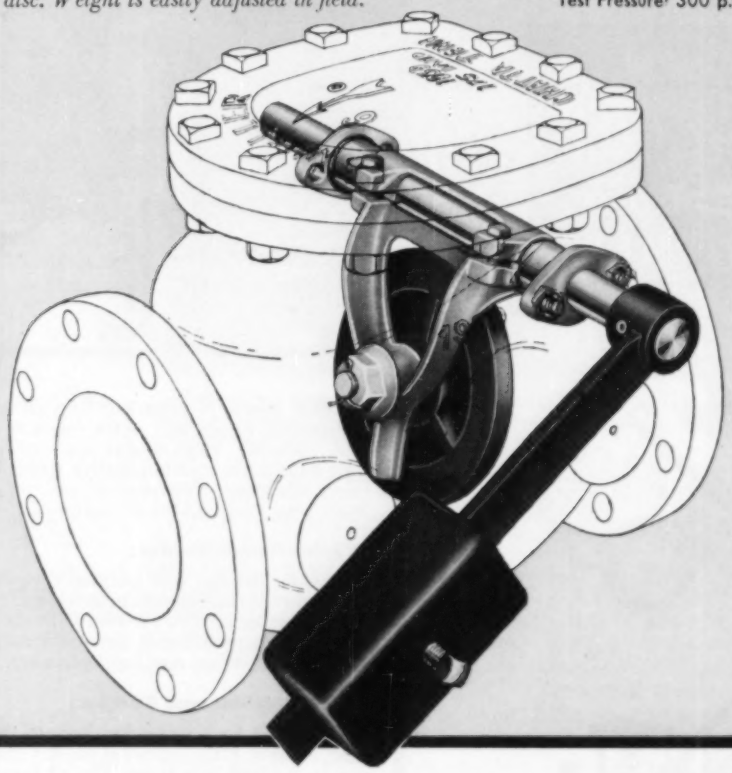

All working parts of these new Mueller Swing Type Check Valves are heavily made to assure long service life and dependable operation *without maintenance.*

A heavy stainless steel hinge pin is used on all lever and weight type (shown) and lever and spring type check valves. This pin is extended through the hinge plugs to permit the lever to be used on either side of the body. An "O" ring on the plug prevents leakage around the pin.

The plain type, without lever, weight or spring, uses a new combined hinge pin and plug which is securely and accurately held to the body by studs and nuts. An "O" ring positively seals the plug to prevent leakage.

Large, wear-resistant bearings and a full-width clapper arm hinge, used in all types, accurately and rigidly align the disc to eliminate chatter and vibration.

These new, heavy duty check valves have been specifically designed for repeated opening and closing applications in water works pumping stations, water filtration plants, sewage treatment plants and general industrial plants. They are suitable for horizontal or vertical installation on water or oil lines.

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The many exclusive features of these new check valves are typical of the attention to detail in research, design and engineering that becomes a part of every Mueller product.

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(Continued from page 140)

lift, the Metropolitan Water District of Southern California incurs a cost of less than ten cents.

It is clear, therefore, that the desalinization process cannot now compete with available fresh water supplies. In places where fresh water shortages exist, however, it is now possible to convert brackish or sea water to a useable supply at a cost which, while it does not compare with good water supplies, is not unreasonable. Even in the Pacific Coast states where water shortages have been overemphasized in the public press, it is clear that fresh water can be made available for requirements after 1990 at a production cost which is extremely low compared with present costs.

A Cheaper Alternative

Comparative costs indicate that cheaper alternatives to desalting or demineralization are often available. Where water is difficult to obtain, where development costs are uneconomic and where geographical proximity favors re-use of wastes, alternative measures are logically sought.

Re-use of natural waters at the present time is a common practice. Undoubtedly it will be expanded as improved and cheaper modes of waste treatment and water purification are developed. Sea water contains 35 times more dissolved solids than does sewage. Under controlled conditions, effluents from disposal plants can be used for irrigation as well as industrial uses.

None of these examples produce additional water but they do stretch our existing water resources over a greater population. ◄◄

Modesto Appoints a Deputy City Manager

Instead of an assistant city manager, Modesto, Calif., now has a Deputy City Manager. John C. Keefe, former manager of San Bruno, Calif., is the newly appointed deputy to Ross Miller, city manager.

Mayor Don Hammond and the City Council made this change to permit the manager to allocate more time to major programs of long-range importance. The deputy city manager will handle the major portion of day-to-day operations.

Mr. Keefe replaces former assistant city manager William Masonheimer, who is now the first city manager of Watsonville, Calif. ◄◄

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Saves You Labor

Read what users say. From a Missouri utility line clearance firm: *"One man can operate the chipper with ease. He alone can handle as much and more brush in the same length of time as could two men loading brush on a platform body."* From a Connecticut tree expert: *"This chipper has cut our brush disposal in half. It has eliminated brush dumps and fires completely."* One large Ontario power customer reports a saving of 25% in man hours expended per tree as a result of equipping their crews with Fitchburg Chippers.

Increases Your Production

In Oregon the Roadmaster for one county said: *"This Fitchburg Chipper has paid for itself twice over the first season."* Another chipper user on Washington State Highways reports that with a crew of three men they can clean up at least a half mile of heavy brush in six hours. A Missouri utility line clearance firm says: *"Our figures show that production has been increased by a good 25% with a Fitchburg Chipper."*

Stays Out of the Shop

Read what satisfied users say. Connecticut: *"The Fitchburg Chipper has never cost us one minute of delay."* Ohio: *"We now have ten of your Fitchburg trailer type chippers. Doing a good job—from the looks of them they will last for many years."* New York: *"Our men are particularly pleased with Fitchburg Chippers. They are rugged and reliable."*

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SOLID PERFORMER

ABC's of Zoning

Zoning originated to "protect the *status quo*" for: (1) *the* wealthy snobs, (2) the not-so-wealthy snobs, (3) the poor snobs, and (4) some snobs in between. This was the light-hearted explanation presented in a panel discussion of "The ABC's of Zoning" at a recent meeting of the American Society of Planning Officials held in Miami Beach, Fla. Panel members Fred H. Bair, Jr., Planning Consultant, Auburndale, Fla.; and Richard Babcock, Attorney, Chicago, Ill., agreed that our concept of zoning has not reached the point where we know exactly what we wish to accomplish. When we do know, we will have standards that will protect neighbors one from another.

The discussion pointed out that the 1924 National Zoning Enabling Act still remains the best authority for local zoning ordinances because it has been tested extensively in the courts and provides wide interpretation for almost any phase of zoning.

Spot zoning was defined as reclassification of a small area without regard to general community interest or needs. As an easy test, if a change is spot zoning, it is done for *someone* rather than for *something*—the change is to benefit an individual rather than to meet a community need.

The speakers observed that in the last few years there has been a move to eliminate the past practice of setting aside certain residential areas exclusively for single-family residences. Instead, single-family, two-family and multiple family structures are permitted in all-residential areas so long as sufficient open space is provided.

By way of illustrating some of the inconsistencies in zoning, the

(Continued on page 147)

Phoenix City Manager Retires

Ray W. Wilson

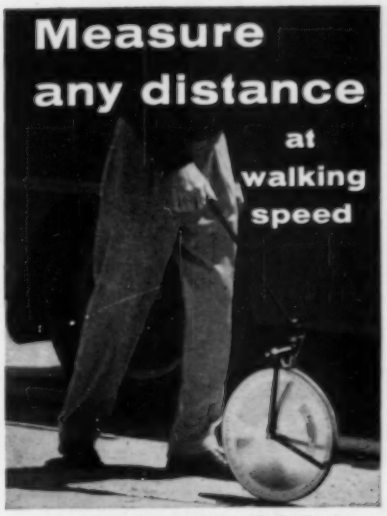
Ray W. Wilson, city manager of Phoenix, Ariz., for the past 11 years, the period of its greatest growth, announced his retirement as of January, this year.

Mr. Wilson received his appointment in January, 1950, when the Charter Government Committee, a reform group, came into power. Previously, he was assistant city manager of Kansas City, Mo., serving under L. P. Cookingham, now manager of Fort Worth, Tex.

Prior to the election of Charter Government Committee candidates, Phoenix had an unenviable record of instability in local government. Managers averaged no more than 13 months before being replaced.

During Mr. Wilson's period of service he had the pleasure of seeing 41 of his administrative assistants move on to responsible assignments as city managers or in other posts in municipal administration. These young men have informally formed a group known as "Wilson Proteges Association" and hold a meeting with him every year during the International City Managers' Association annual conference.

When the reform administration appointed Mr. Wilson, Phoenix had a population of slightly more than 100,000 and an area of 16.4 square miles. Today its population is 439,170 and its area is 187.4 square miles. During this period, the city has twice received the coveted All-America City Award. ◄◄



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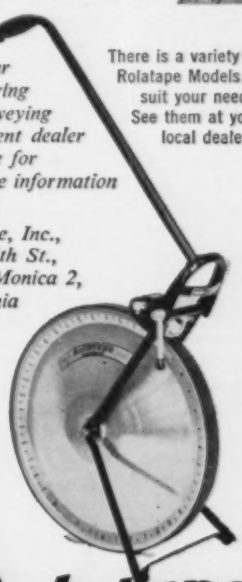

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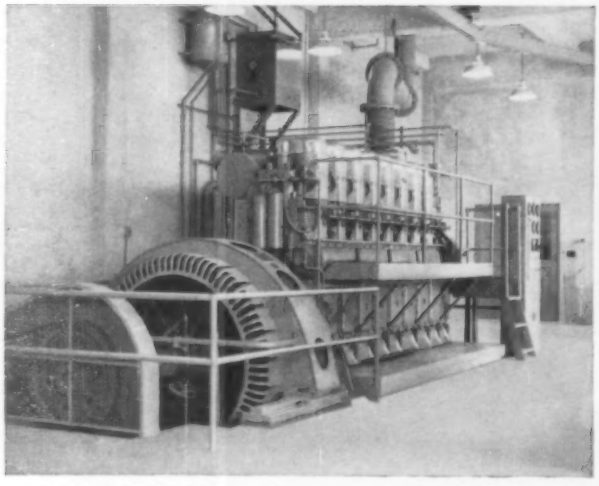

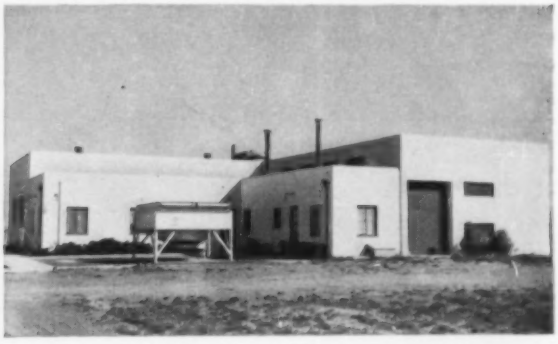

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(Continued from page 145)

panel noted that most ordinances provide for the largest lot sizes in areas where families are smallest, the smallest lot sizes in areas where families are largest; highest permissible building heights in districts where congestion is already the greatest, low buildings required where congestion is least; high parking requirements in areas where parking is least a problem and low parking requirements where parking needs are greatset. Presumably all of this, is in accordance with a comprehensive plan.

The problem of working out meaningful standards for off-street parking presented many intangibles. For example, how many more spaces should a good furniture merchandiser be required to provide than a poor furniture merchandiser? Or by what means should the planner determine how soon the poor furniture store will be replaced by a good supermarket in the same building? Also, if he knows, should he require the owner of the unsuccessful furniture store to provide adequate parking space for the supermarket at the time when the furniture store is built?

On another front, the panel noted success in developing good standards for relating height of buildings to areas of lots and yards, and planes of exposure to the sky. These formulas tend to be complicated—which perhaps cannot be avoided. But they do protect the public interest in light and air.

In discussing zoning in relation to planning it was pointed out that it was essential to have a working plan of land use, both present and projected, with a master plan map giving roughly the proposed land use. This procedure aids in gaining public acceptance and warding off attack.

The speakers explained that an existing community has certain limitations set on its zoning by what has already happened. If eight times as much land has been set aside for commercial purposes as could conceivably be used, and if this land has been spotted up with scattered commercial development, there isn't much that new zoning can do to turn back the pages of time. The best hope is to keep the situation from getting worse. So far, urban renewal pro-

(Continued on page 149)

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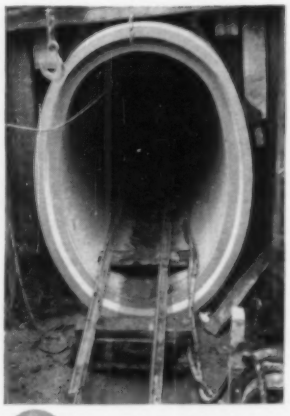

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(Continued from page 147)

grams have concentrated on housing, and about the only way to eliminate the strip commercial slums which develop as a result of over-zoning for commercial purposes is to embark on an extensive and expensive major street program, widening the streets just enough to eliminate the buildings. Unfortunately, in most cities this would lead to re-creation of commercial slums, on grounds that land along a major street should be zoned commercial.

Discussion brought out the following points: that buffer zones should be provided by the commercial establishment or developer; that there was a growing tendency to acknowledge that industrial establishments are entitled to protection from offending neighbors; that farm land be set aside on the master plan and re-zoning left to the time when it was actually needed in order to protect future use; that most states have ruled that a variance may not be granted solely on the basis that a firm would make more money thereby; and that most states have ruled that a use-variance is illegal. ◄◄

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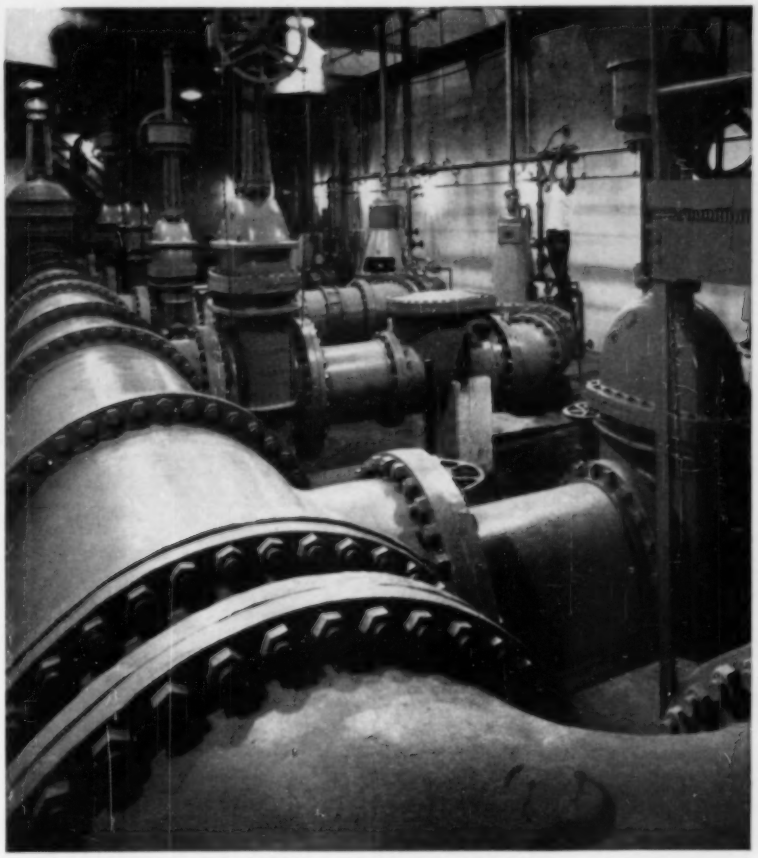
The capsule goes on to relate more than 50 such pieces of information, ending with "America's No. 1 Shrine."

Printed in four languages, English, French, Spanish, and Italian, the capsule is slated for distribution in all parts of the world. ◄◄



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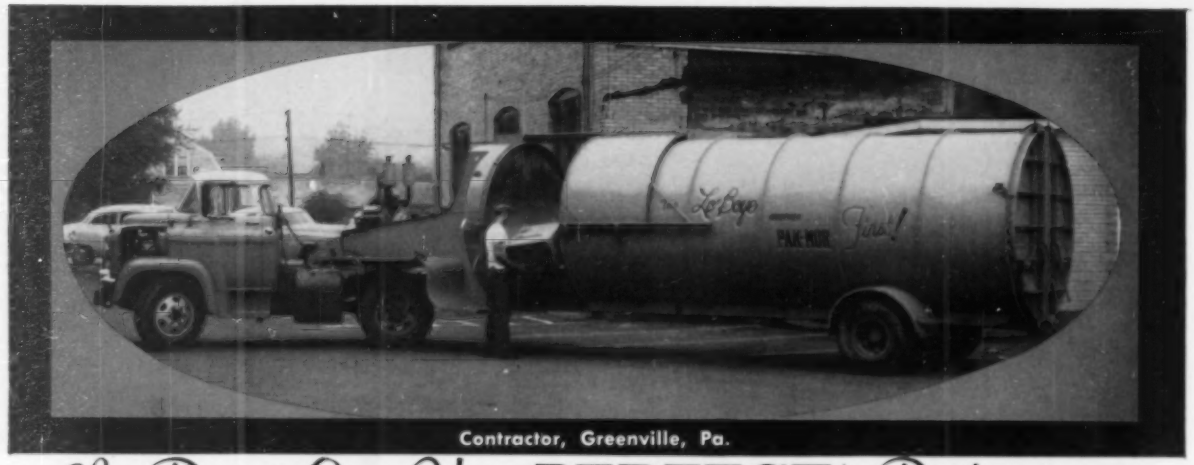

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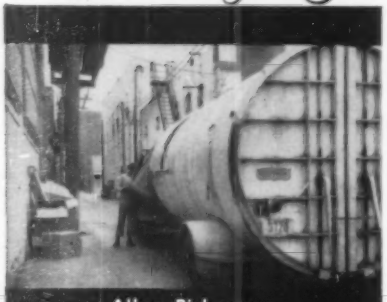

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Edited by NORMAN WILLIAMS, Jr.

Floating Zone Gets a Setback

. . . and comprehensive planning receives a significant court decision

PENNSYLVANIA. *Eves* v. *Zoning Board of Adjustment of Lower Gwynedd Township*, 164 Atlantic (2d) 7 (Supreme (highest) Court, September 26, 1960).

An amendment to a suburban zoning ordinance created a new "limited industrial" district, without mapping any areas in such district; it also established a procedure whereby any property owner could apply to have his property rezoned to this district, with requirements for a referral to the local planning commission and a series of public hearings before legislative action.

The regulations set forth a scheme of restrictions on development in this district:

- a minimum lot size of 25 acres.
- 10% coverage.
- "adequate" parking space.
- overall planning of any proposed development within a single architectural scheme.
- landscaping and buffer strips.

It further provided that, if no substantial construction had commenced within 18 months, the rezoned area would automatically revert to its former classification. This case involved a tract of nearly 100 acres, rezoned to the industrial district, in response to an application to build a factory and a sewage treatment plant. Nearby property owners challenged this rezoning on both constitutional and statutory grounds. The Pennsylvania Supreme Court upheld the proceedings but held that the rezoning was invalid, on the ground that it failed to conform to a "comprehensive plan," as required by the zoning enabling act.

Here, then was a typical case of a "floating zone," inserted into the ordinance but purposely unmapped. (The procedure was referred to in the opinion as "flexible selective zoning" — whatever that might mean.) Districts of this type are not uncommon in recent ordinances; and state courts have reacted in different ways to the legal issues involved.[1] However, the Pennsylvania Court's reaction transformed this from an ordinary floating-zone case into a broad analysis of the nature of planning in relation to zoning.

> "The zoning scheme as outlined by Ordinances 28 and 34 is at variance with these legislative directives for second class townships in two objectionable ways: (1) The ordinances were not enacted 'in accordance with a comprehensive plan' and (2) they devolve upon the township supervisor's duties quite beyond those duties outlined for them in the enabling legislation."

In the opinion, the Court held that for all practical purposes the procedure set forth in the "limited industrial" district regulations precluded any possibility that action taken thereunder would be in accordance with a comprehensive plan, and that therefore this district and all proceedings taken thereunder were invalid under the enabling legislation for zoning in Pennsylvania.

> "Zoning is the legislative division of a community into areas in each of which only certain designated uses of land are permitted so that the community may develop in an orderly manner in accordance with a comprehensive plan. Best v. Zoning Board of Adjustment, 1958, 383 Pa. 106, 110, 141 A. 2d 606, 609. The zoning regulations of a second class township, by legislative edict, must be the implementation of such a comprehensive plan. Just what the precise attributes of a comprehensive plan must be, or the extent to which the plan must approach a development plan for the township formulated by a planning commission should one exist is not now before us. . . . For present purposes, it is only important to point out that the focus of any plan is land use, and the considerations in the formulation of a plan for the orderly development of a community must be made with regard thereto . . .
>
> "The adoption of a procedure whereby it is decided which areas of land will eventually be zoned 'F-1' Limited Industrial Districts on a case by case basis patently admits that at the point of enactment of ordinance 28 there was no orderly plan of particular land use for the community. Final determination under such a scheme would expressly await solicitation by individual landowners, thus making the planned land use of the community dependent upon its development. In other words, the development itself would become the plan, which is manifestly the antithesis of zoning 'in accordance with a comprehensive plan . . . '
>
> "Appellees vigorously contend that a comprehensive plan does exist for the Township of Lower Gwynedd and is set forth in the record. Essentially, appellees argue, the plan contemplates a 'greenbelt' township predominantly residential in character with a certain amount of compatible non-residential occupancy consisting of shopping centers, research and engineering centers and limited industrial uses. It also contemplates that these non-residential uses shall be strictly controlled as a setback, building area, noise, smoke, sewage disposal, etc., and that the means of such control shall be vested in the supervisors through strict ordinances of general application such as ordinance 28, supra, setting up the requirements and limitations on limited industrial uses. In turn, these tools of control and minimum standards are to be the polestars (along with other factors such as the proximity of through highways, availability of adequate streams for affluent disposal, etc.), in any further consideration to be given by the planning commission and the supervisors to applications for specific locations or areas. By adopting this approach, the appellees have confused comprehensive planning with a comprehensive plan. The foregoing are certainly the rudiments and fundamentals which enter into the promulgation of a planned zoning scheme for the township. They are, however, only the most preliminary and basic considerations from which the ultimate decision of selective land uses are to be made. Until such time, no final formulation exists which satisfies the comprehensive plan' requirement within the meaning of the enabling legislation."

Moreover the Court went on to make additional points—some of them very telling points—on several potential disadvantages of the type of procedure involved here.

> "Several secondary evils of such a scheme are cogently advanced by counsel for the appellants. It would produce situations in which the personal predilections of the supervisors or the affluence or political power of the applicant would have a greater part in determining rezoning applications than the suitability of the plan for a particular use from an overall community point of view. Further, while it may not be readily apparent with a minimum acreage requirement of 25 acres, 'flexible selective zoning' carries evils akin to 'spot zoning,' for in theory it allows piecemeal placement of relatively small acreage areas in differently zoned districts. Finally, because of the absence of a simultaneous delineation of the boundaries of the new 'F-1' district, no notice of the true nature of his vicinity or its limitations is afforded the property owner or the prospective property owner. While it is undoubtedly true that a property owner has no vested interest in an existing zoning map and, accordingly, is always subject to possibility of a rezoning without notice, the zoning ordinance and its accompanying zoning maps should nevertheless at any given time reflect the current planned use of the community's land so as to afford as much notice as possible."

In the second place, the Court held specifically that, if any scheme such as this was to be permitted in Pennsylvania, it would be necessary to have explicit authorization in the enabling legislation

> "As to the second objection, the township supervisors have gone beyond their function of implementing a comprehensive plan with zoning regulations: they are to analyze on a case by case basis for rezoning purposes individual applications and accompanying technical plans for structure and development to determine their suitability and compliance with the standards they themselves established in the ordinance.
>
> "In the enabling legislation, only the specialized township board of adjustment was empowered to permit deviations from the prevailing zoning regulations on a case by case basis, and then only by means of two detailed procedures—variances and special exceptions section 2007, 53 P.S. section 67007. To obtain either, a petitioner must follow a system specifically devised to give certain protection to any affected property owners. To obtain a variance, a petitioner must convince the board of adjustment that 'owing to special conditions a literal enforcement of the provisions of the ordinance will result in unnecessary hardship, and . . . that the spirit of the ordinance shall be observed and substantial justice done . . .
>
> "Special exceptions are handled somewhat differently, but similar safeguards are still provided. . . . Importantly, all property owners are put on notice of the possibility of an exceptional use within their district, because such use is set out

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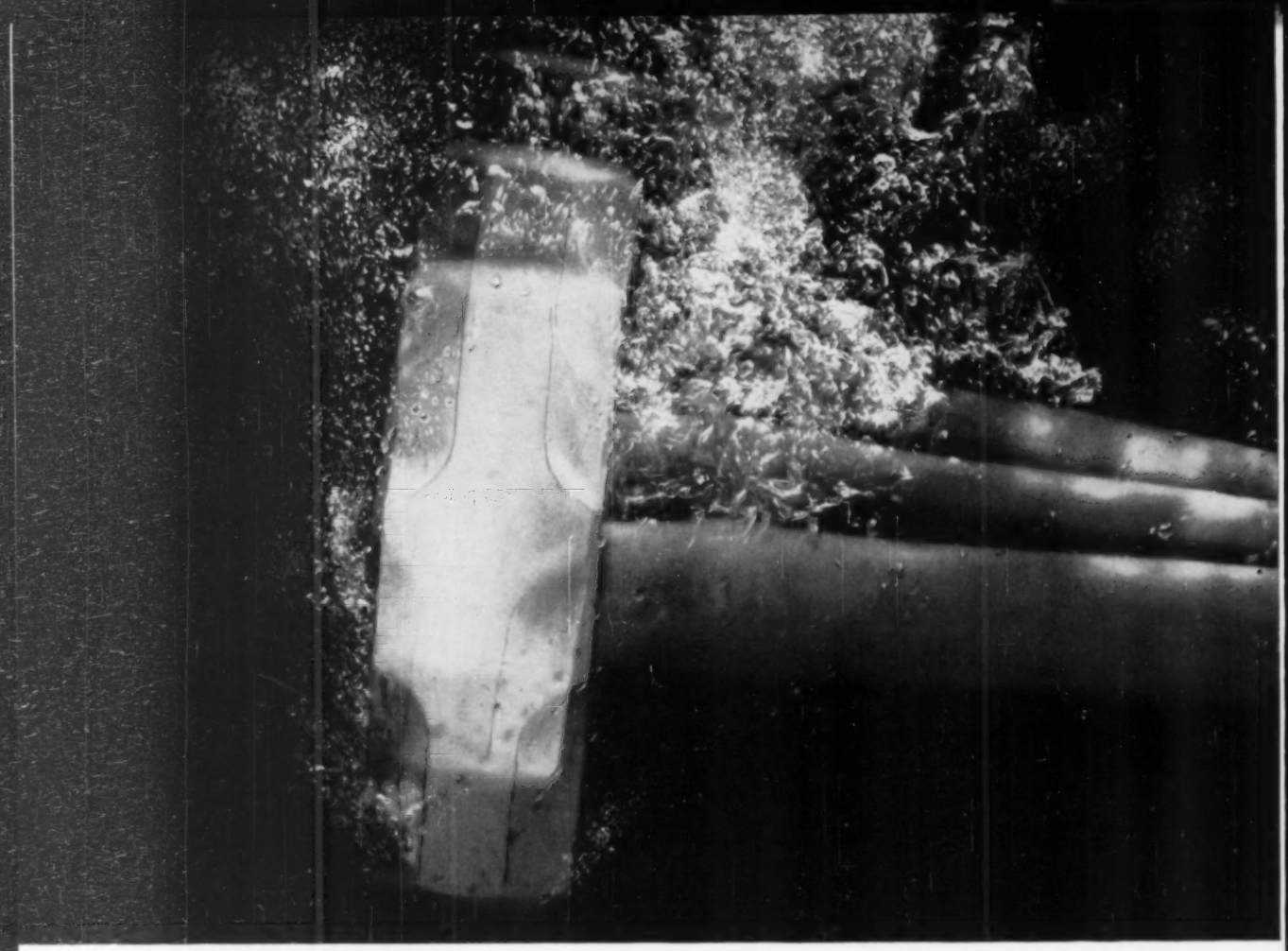

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24	69	335	1040	86	420	1300	102	505	1560	119	585	1820	136	665	2080
30	86	270	835	108	340	1040	129	405	1250	150	475	1455	170	535	1670
36	106	225	695	130	280	870	155	340	1040	181	395	1210	206	445	1390
42	119	195	595	148	240	745	177	285	890	206	335	1040	234	380	1190
48	137	170	520	171	210	650	203	250	780	236	290	910	268	330	1040
60				214	170	525	255	200	625	296	235	730	336	265	835
72	NOTE: Higher strength steels are available which permit the use of higher working pressures.						309	170	520	359	195	605	408	220	695
96										470	145	455	539	165	520

NOTE:
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$P = \frac{t \times Ts}{r}$

P = internal pressure, psi
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(Continued from page 151)

originally as part of the district's scheme in the ordinance. . . .

"Under the 'flexible selective zoning' scheme here under attack, changes in the prevailing zoning regulations are to be made on a case by case basis, not, however, by a specialized body such as the zoning board of adjustment, but by the legislative body without rigid statutory standards and without any scintilla of notice of potential change as in the case of special exceptions. The standard review by the courts, as indeed the appellees argue we should adopt herein, would be nothing more than to assure ourselves that each legislative act of amending the zoning map by the township supervisors was not 'arbitrary, capricious, or unreasonable.' If the legislature contemplated such a novel scheme of zoning, withdrawing as it does a close standard of court review in the very delicate area of protecting property rights, and shifting as it does the focus from planned land use to individual solicitation, we are convinced it would have said so in more clear and exact terms than we found anywhere in the enabling legislation."

This is one of the most important zoning decisions in recent years, far transcending the much-debated "floating zone" issue.[2] The important aspect of the *Eves* case is, of course, the holding that the "comprehensive plan," required as the legal basis of zoning, is at the least a complete land use plan, including definite allocations of land for the major land uses. This need not preclude the possibility of making changes in the planned land use pattern; but the Court clearly rejected the notion that changes under this scheme, initiated by the property owner, could be called part of a comprehensive land use plan, so understood. And in this, of course, the Court was correct.

Whether or not the local planning commission here had prepared a master plan was not clear in the record, and so the Court did not finally rule on whether the land use part of such a plan was the same thing as the land use part of a "comprehensive plan." The implication is clear that it would be, for there are repeated references to the comprehensive plan (and/or land use decisions) as something existing apart from the zoning law, which must be designed to implement that plan. As far as this point is concerned, other courts have tended to go in the other direction. For example, in *Lavinsky* v. *Bridgeport*, 144 Connecticut 117, 127 Atlantic (2d) 822 (1956), the Connecticut court decided that, since the state zoning enabling act was passed before the planning enabling act, the "comprehensive plan" required as a basis for zoning must be something quite different from the land use plan prepared under the latter statute.[3] This leads directly to absurd results; for there is no sense whatsoever in having two separate plans for a community's future, covering the same subject-matter, but prepared by different local agencies and presumably different in content. Here, because of the vagueness of the enabling acts, the argument on what is meant by a "comprehensive plan" has gotten off onto a somewhat unreal side issue—whether that plan must be a separate document. A Great Debate along these lines quickly degenerates into a silly argument—as to whether there should be a single document, or two separately-bound piles of paper. While the whole question needs to be cleared up by rephrasing the enabling acts, the Pennsylvania decision points the way to a more fruitful inquiry by focussing attention on the content of the planning needed to support zoning.

The basis issue is then the content of the "comprehensive plan" for zoning; and this is best understood in the light of an analysis of the content of a modern master plan, as I understand it. The essential point in the *Eves* case is that this plan must include an overall scheme of land use designations for specific areas. The Court gave short shrift to the Township's argument that a series of basic policies on the Town's development were sufficient to constitute such a plan.

In modern planning thought, a master plan would, of course, include *both* the basic policies and the major land use allocations, along with other specific development proposals. A plan consisting purely of statements of general policies, without any translation of these into specific proposals for land use allocations (and major public facilities), is so vague as to be inadequate for several reasons. First, as a practical matter, such a plan is unlikely to stir up general interest in, and serious thinking about, the community's future. Second, the policies can be so vague and general as to give little guidance in dealing with specific problems; all sorts of very different proposals could be justified by reference to them. The explicit formulation of such general policies is, of course, basic; but an equally important part of the planning job is the translation of such policies into the specific development proposals best designed to implement them. Moreover, this is an intellectually rigorous job; it is rather easy to see whether there has been any serious attempt to do it. In contrast—as is clearly indicated by this case—a plan consisting solely of general development policies may be high-sounding, but need not have any planning content at all. The Pennsylvania Court's decision is thus generally in line with the best in modern planning thought.

However, in two respects the *Eves* decision may cause problems, because of the Court's incomplete understanding of planning practice. The requirement that land use designations must be indicated on some sort of a plan is quite proper for an industrial area, which is what was involved here. Selection in advance of the proper land for industrial use is not too difficult, and there is no reason why a community (especially a community wishing to zone) should not give due notice on where such areas will be located. The same is true for the larger commercial areas, including major shopping and commercial service areas. However, it is not necessarily true about local shopping areas, particularly in communities with large amount of vacant land, unless the street system has been fairly well defined in advance; and so a similar holding as to these areas might be unduly rigid.[4] Second, the notion that the land use and zoning designations must be the same is not always correct. For, in certain types of situations—particularly in the case of a land use change intended to take effect after a considerable period of time—the zoning mapping may appropriately follow the present use, while the proposed land use designation may indicate the future change to a different category.

[1] See for example Rodgers v. Tarrytown, 302 New York 115, 96 North Eastern (2d) 731 (1951); Newark Milk and Cream Co. v. Parsippany-Troy Hills, 135 Atlantic (2d) 682 (New Jersey Superior Court, 1957).

[2] On that issue *per se*—if the courts should adopt a rule that a zone is valid if it is mapped somewhere but invalid if it is not, this is an open invitation to local zoning authorities to set up such a district, and then to map it in some out of the way spot where it doesn't make any difference; practically every community has a swamp which would be appropriate for this purpose. Once such a district is mapped somewhere, then any further remapping is merely subject to the regular rules applying to changes in the zoning maps. Courts are understandably reluctant to issue major constitutional decisions which can be so easily circumvented; this policy has, for example, been most evident in judicial reluctance to supervise and implement the constitutional requirement for reapportionment of state legislatures. Perhaps for this

(Continued on page 155)

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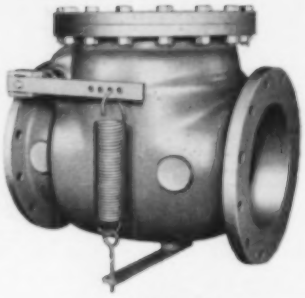
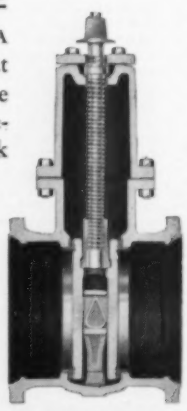


EDDY Check Valves

Completely new designs of horizontal swing check valves are available in sizes from 4 through 12 inches. They operate dependably in either vertical or horizontal positions and incorporate construction features which provide unusual flexibility of operation. These valves may be converted in the field from plain to single- or double-lever operation to meet changing requirements. Other check valves up to 24 inches.

EDDY Gate Valves

In addition to the regular line of EDDY Taper Seat AWWA gate valves, EDDY now offers a newly designed parallel seat AWWA gate valve in sizes through 12 inches. This valve has been specifically engineered to provide long, trouble-free service. Working parts are designed with heavy, thick section and large seating surfaces for dependable operation and improved wearing qualities. The valve has two-point, free-floating wedging for minimum friction and maximum operating ease. Other AWWA gate valves are available through 48 inches.



Whatever your waterworks requirements, it will pay you to have full information on the complete EDDY *line of valves and hydrants.*

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.
WATERFORD NEW YORK

(Continued from page 153)

reason, the plentiful discussion on the "floating zone" issue has been confused and a little unreal.

[2] And see Kozesnik v. Montgomery, 24 New Jersey 159, 131 Atlantic (2d) 1 (1957); Huff v. Baltimore County, 214 Maryland 48, 133 Atlantic (2d) 83 (1957).

[4] Compare Bartram v. Bridgeport, 136 Connecticut 89, 68 Atlantic (2d) 308 (1949); Rockhill v. Chesterfield, 23 New Jersey 117, 128 Atlantic (2d) 770 (1957).

Challenges To Cities

The five great challenges facing modern cities throughout America today are:

***Slums*—that have spread into medium-sized cities as well as the large.**

***Housing*—for 40,000,000 Americans who live in substandard dwellings; 22,000,000 who live in slums (more than live on all of the nation's farms) and 15,000,000 families of moderate income.**

***Highways*—if urban areas cannot put the auto in its rightful place, cities will face a limited and dreary future.**

***Economic development* — cities produce 75% of the national wealth and probably contain more than 75% of the unemployment.**

***Schools and human resources*—because it is only as they grow in human opportunities and human rights that cities are renewed.**

These points were emphasized by Mayor Richard C. Lee, New Haven, Conn., in a panel discussion held at the recent American Municipal Association meeting in New York City.

Cities are not ignored today, Mayor Lee asserted. President John F. Kennedy, he argued, has not been called "the president of the cities" simply because it was the vote of the cities which elected him. Kennedy is vitally aware of the needs of America's cities. He has endorsed broad programs of action to meet these needs.

In addition to the five challenges, Mayor Lee listed three others which must be met. These are:

***Older neighborhoods* — deteriorating at an alarming rate, and that require comprehensive neighborhood-improvement programs.**

***Low-rent and moderate-cost housing* —that require experiments with scattered-site public housing, with rehabilitation of existing substandard private units, with sale to cooperatives.**

***Civic design* — "we have inherited much beauty in our cities; we must bequeath much more."** ◄◄

DIGS DEEPER: 15′ 0″
MORE REACH: 20′ 8″
DUMPS HIGHER: 12′ 6″
SWINGS A FULL 190°

NEW
PARSONS-SHAWNEE
1500

BIGGEST BACKHOE ON THE MARKET

This Shawnee 1500 offers you more for your money than any tractor-mounted backhoe on the market today: More reach, more digging depth, more loading height. New, fast cycling action boosts output to 4 payloads a minute. And the boom has an uninterrupted swing of 190° that makes bell hole and spot excavation work easier anywhere. Fits all popular make tractors — new and used!

"HYDAWAY-HYDRAULICS" . . . cylinders, rams, and hoses are tucked away, shielded from dirt and hard knocks of close-quarter work. A Shawnee exclusive.

NON-SKID STABILIZERS . . . independently controlled telescoping stabilizers provide firm footing, level machine on uneven terrain.

3-POSITION "DIG-ALL" BUCKET . . . handles all excavating jobs easily . . . including straight down spot digging. Sizes from 16″ to 36″ widths.

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Newton, Iowa

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CITY _____ STATE _____

S100AMC

Back in 1940, Warren Bros. Company, Contractors, built these runways to Federal Specifications. They built them to last—with Chevron Asphalt!

Washington National Airport, noted for unobstructed approaches, is a 667 acre area located at a wide bend of the Potomac River. It has served during what must be regarded as the most hectic and active two decades of the air age!

As traffic handled at the airport increased over the years, the original paving has been added to and widened. The present pavement is equal in area to 30 miles of four-lane highway!

In 1953, the runways were sealed with BITUMULS RS-2 and clean, specially graded aggregate. This is the story of service, the story of *asphalt* service on an airport carrying an exceptionally heavy traffic load.

For information or typical specifications on runway construction, or on any type of paving, with Chevron Asphalt or Bitumuls Emulsified Asphalt, call our nearest office.

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Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Annexation Denied
Where Not Contiguous

In consolidated proceedings by two cities attacking annexation proceedings by each other, held, since territory was not contiguous to either city at time of inception of either annexation proceedings, both annexations invalid. *City of Port Hueneme* v. *City of Oxnard*, 341 P.2d 318 (Cal., June 24, 1959 vacating decision at 18 M.L.C.D. 45)

Annexation—
Petition Approved

In annexation proceedings where area was small and annexation had not been approved by County Planning Commission, held annexation approved since nothing showed it would not be to best interest to residents affected. *City of Sherwood* v. *Hardin*, 325 S.W.2d 75 (Ark., June 1, 1959)

Assessments—
Statute of Limitations Not Applicable

In proceeding for review of assessment levied on petitioners' property for construction of storm sewer, held lien of assessment persists until paid and statute of limitations was no bar. *Ploss* v. *Board of Assessors of City of New York*, 186 N.Y.S. 2d 301 (N. Y. Sup. Ct., Queens Cty., March 13, 1959)

City Officers—
Violation of Bond

In action against city official and bonding company to recover amount withdrawn on vouchers where defendants demurred, held complaint alleging fiduciary capacity, demand for accounting and refusal stated cause of action. *City of Milwaukee* v. *Hurless*, 97 N.W.2d 399 (Wis., June 26, 1959)

Civil Service—
Selection Procedure Upheld

In action to compel personnel board to certify petitioner as qualified for permanent appointment, held section of personnel code permitting certification of only three highest names on eligible list was proper municipal regulation. *Beaulieu* v. *Walsh*, 152 A.2d 538 (R.I., June 24, 1959)

Contracts—Incomplete Bid—
Late Objection Will Not Upset

Where lowest bidder omitted two pages of special instructions and after opening of bids he was permitted to amend, held such bid was invalid but where next lowest bidder waited four months to object and in the meantime lowest bidder had commenced performance of contract bid was permitted to stand. *General Steel Products Corp.* v. *City of New York*, 187 N.Y.S.2d 74 (N.Y. Sup. Ct., New York Cty., April 15, 1959)

Ordinances—
Regulation of Stairways Retroactive

In action for injuries sustained from fall on steps at church entrance, held code section making specific provisions for handrails on exit stairways applied retroactively to church building in existence before adoption of code. *McQueeney* v. *Catholic Bishop of Chicago*, 159 N.E.2d 43 (Ill. App., Apr. 22, 1959)

Pensions—Modifications Upheld—
No Vested Rights

In action concerning modification in law relating to pensions which resulted in decrease in amount payable to policeman, held his rights under law orignally enacted did not rest on contract and were not vested rights. *Robinson* v. *Police Pension Board*, 339 P.2d 739 (Ariz., May 20, 1959)

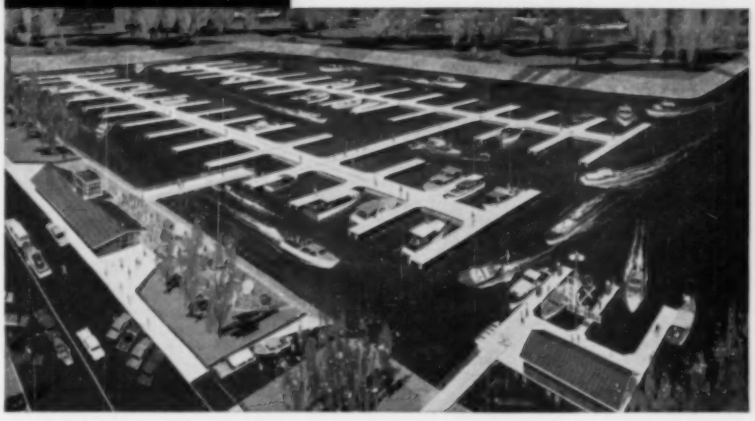
Tort Liability—
Minor Shot by Reserve Policeman—
New Trial

In appeal of dismissal of claim alleging inadequacy of training of reserve policemen of borough in use of gun where policeman shot and injured minor, held borough could be liable for negligence in assigning such person to police duties and new trial ordered. *McAndrew* v. *Mularchuk*, 152 A.2d 372 (N.J. Super. Ct., App. Div., June 22, 1959)

Zoning—
Residential to Business Denied

In suit to enjoin using residential property for business purposes, held fact that rezoned property was itself subject to prior non-conforming use would not justify spot rezoning. *D'Angelo* v. *Knights of Columbus' Bldg. Ass'n. of Bristol*, 151 A.2d 495 (R.I., May 14, 1959)

MODERN MARINAS by Standard Steel



Sure, Fast Way to a BOATING BOOM for Your Town!

FREE

Full-Color Brochure illustrates today's finest all-steel Marinas, with features and construction details, as well as photos of actual installation. Write for your copy today!

Your town, too, can prepare for boating leadership in *record time* with a modern Standard Steel Marina like this! Includes finest, latest designs in all-steel floating boat slips, colorful boat shelters, non-skid steel floating docks and access ramps, self-adjusting stairways, floating service patios and accessories . . . All pre-planned, engineered, and pre-fabricated for *fast* installation—ready for your boaters in *days* instead of months, lower in cost, yet promising years of safe service.

Start YOUR Marina planning NOW!
Term financing available.

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Branches: Paramus, N.J. — Detroit, Mich.
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CLIP THE COUPON FOR COMPLETE DETAILS

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☐ Have your Marina Expert call on us for free consultation and planning aid.

NAME..... TITLE.....

ADDRESS.....

CITY..... ZONE.... STATE.....

RECENT CITY MANAGER APPOINTMENTS

J. F. Neide, Newark, Del. | *P. A. Pakey, Quakertown, Pa.* | *A. J. Ofensend, Sparta, N. J.* | *E. L. Neumann, Marquette, Mich.* | *J. C. J. Heroux, Shawinigan-Sud, Que* | *R. J. Eppley, Northlake, Ill.*

DON F. ALLARD, assistant to the manager of Columbia, Mo., was appointed manager of Flat River, Mo., succeeding Victor Bortnick.

O. K. ARMSTRONG, JR., has been appointed manager of Winter Haven, Fla., succeeding Walter J. Slattery. Mr. Armstrong had been on the staff of Metropolitan Dade County (Fla.) Planning Department and before that was an administrative assistant to the manager of Dade County.

WILLIAM N. ARMSTRONG has been appointed the first manager of Sierra Vista, Ariz.

MRS. LOUISE BENNETT, town clerk of Dundee, Fla., has been appointed manager of that city, succeeding Harold R. Greenlee.

TERRELL BLODGETT, assistant city manager of Austin, Tex., has been appointed manager of Waco, Tex., succeeding Jack W. Jeffery.

CARL M. BROBERG, assistant to the manager of Arlington, Va., has been appointed manager of Worthington, Ohio, succeeding James E. Johnson.

WALTER J. BROWN, JR., city manager of Opa-Locka, Fla., for the last three years was recently appointed manager of Eau Gallie, Fla., succeeding Clark Maxwell. Mr. Brown was previously administrative analyst in Kansas City, Mo.

JOHN A. CLARY has been appointed manager of Brownwood, Tex., succeeding Jack Broad, who resigned to enter private business in Brownwood.

KENNETH K. CONREY, administrative assistant of Borger, Tex., has been appointed manager of Spearman, Tex., succeeding Leo Dacus.

W. THOMPSON COX has been appointed manager of Jacksonville, N. C., succeeding C. L. Barnhardt, now manager of Hickory, N. C.

RICHARD K. CURRY has been appointed manager of Drumright, Okla., succeeding Max L. Minor.

ROBERT E. CURTIS, manager of Houlton, Me., has been appointed manager of Ipswich, Mass., succeeding Gordon Dillon.

ROBERT J. EPPLEY, manager of Palatine, Ill., for the past three and one-half years, has been appointed the first manager of Northlake, Ill. Mr. Eppley was previously manager of Washington Courthouse, Ohio, and Greendale, Wis.

S. VINCENT ERDELYI, assistant manager of Buena Park, Calif., has been appointed manager of that city. Mr. Erdelyi was previously manager of North Bay Village, Fla., and McCandless Township, Pa.

JAMES M. FALES, JR., administrative assistant of Berkeley, Calif., has been appointed manager of Pleasanton, Calif.

RICHARD I. GORMAN of Kalamazoo, Mich., has been appointed manager of Petosky, Mich., succeeding Ernest L. Neumann.

ALVIN A. HEIDNER, an assistant headmaster in a private school in West Orange, N. J., has been appointed manager of Newport, N. H., succeeding Howard H. Reed.

DAVID B. HENRY, assistant administrator of Fresno County, Calif., has been appointed manager of Sparks, Nev., succeeding Robert W. Rank.

J. C. JACQUES HEROUX has been appointed first engineer-manager of the Village of Shawingan-Sud, Quebec, Canada.

MILTON S. HETZEL, formerly manager of Sebastopol, Calif., was recently appointed manager of Campbell, Calif. Mr. Hetzel was previously administrative assistant at Sunnyvale, Calif.

RICHARD P. HILL, manager of Lubec, Me., has been appointed manager of Camden, Me., succeeding Sterling Morris.

ROBERT A. LA FOUNTAIN, manager at Orrington, Me., has been appointed the first manager of Winooski, Vt.

ROBERT H. LANGKAWEL, a member of the city council of Whitehall, Mich., was recently appointed manager of that city succeeding Carlton W. Laird.

STANLEY J. LAVERY, manager of Mars Hill, Me., has been appointed manager of Lisbon, Me.

WILLIAM LAW, manager of Guttenberg, Iowa, has been appointed manager of Woodstock, Ill., succeeding Pete A. Pakey.

JOE MILLER, assistant manager of Richland, Wash., has been appointed manager of Bellevue, Wash., succeeding W. W. Kennedy.

(Continued on page 161)

R. H. Wilson, Nevada, Mo. | *S. V. Erdelyi, Buena Park, Cal.* | *G. D. Smith, Yakima, Wash.* | *Don F. Allard, Flat River, Mo.* | *M. L. Minor, Sapulpa, Okla.* | *W. J. Brown, Eau Gallie, Fla.*

Fort Worth chooses Armco SMOOTH-FLO Pipe

reduces costs and installation time

Economical, Durable, Strong

Fort Worth, Texas, recently completed a 72-inch sanitary sewer main that had to cross under heavily-traveled Belknap Street and three railroad lines. Tunnels were constructed at these sites and Armco ASBESTOS-BONDED SMOOTH-FLO® Pipe was threaded inside the tunnels. SMOOTH-FLO was specified for two reasons:

1. The outside diameter of 72-inch I. D. SMOOTH-FLO Pipe is only about 73 inches, while the outside diameter of 72-inch I. D. rigid pipe is 88 inches. Since SMOOTH-FLO could be installed in a much smaller tunnel, considerable savings in material and labor costs resulted.

2. Lightweight SMOOTH-FLO Pipe is easier to thread inside a tunnel than heavier pipe, reducing installation time and expense.

How can Armco SMOOTH-FLO Pipe help *you* with *your* sewer problems? Fill in and mail the coupon. A qualified Armco Sales Engineer will be glad to call you for an appointment. No obligation, of course.

Armco Drainage & Metal Products, Inc.
4571 Curtis Street, Middletown, Ohio

Have an Armco Sales Engineer call me for an appointment.

New steels are born at Armco

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Address_____

City_____

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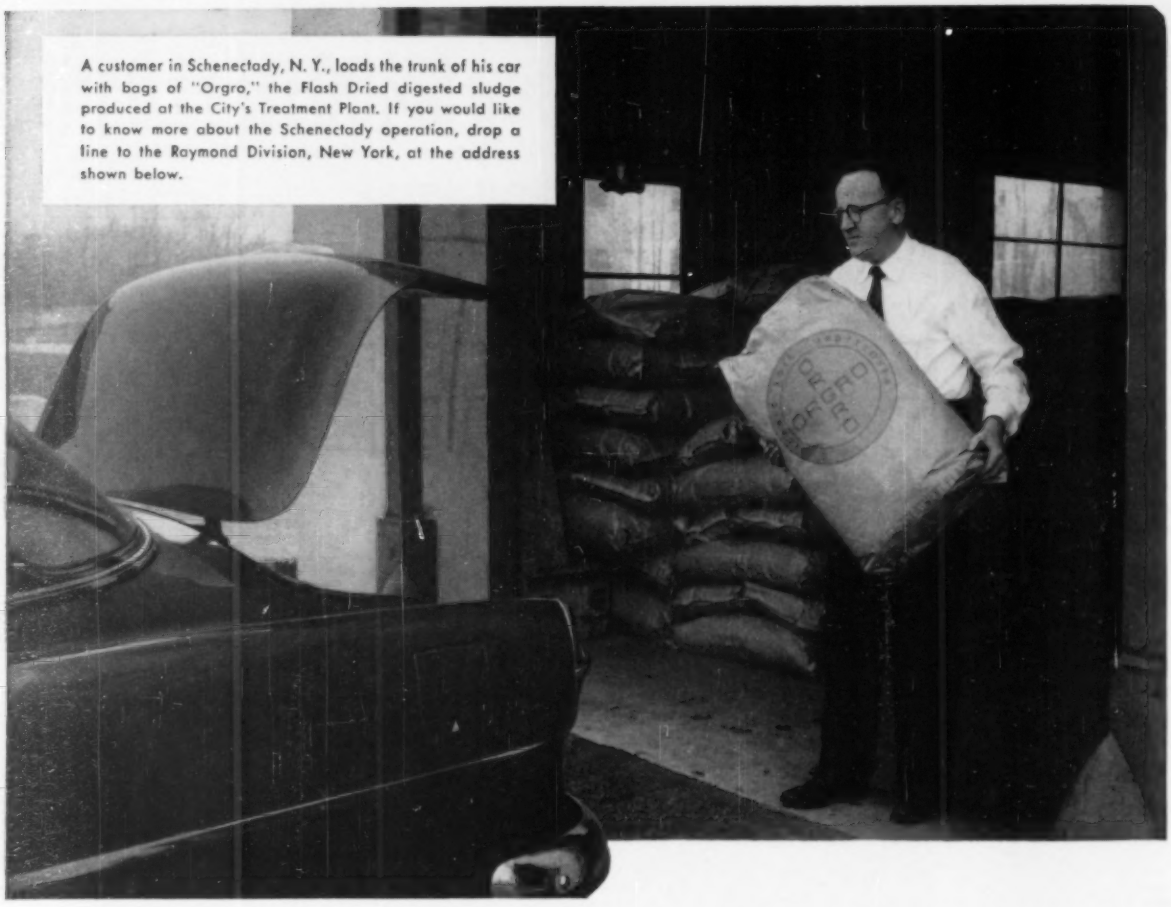
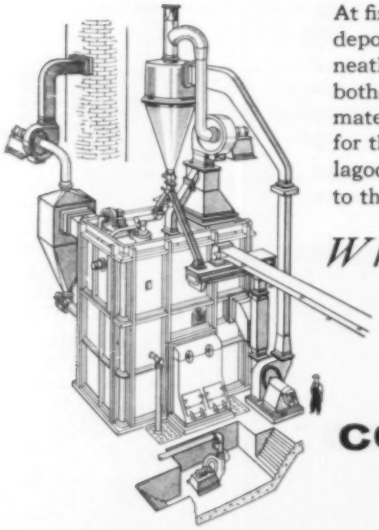
ARMCO Drainage & Metal Products



A customer in Schenectady, N. Y., loads the trunk of his car with bags of "Orgro," the Flash Dried digested sludge produced at the City's Treatment Plant. If you would like to know more about the Schenectady operation, drop a line to the Raymond Division, New York, at the address shown below.

Can you think of a better way to dispose of sewage sludge?



At first glance, the trunk of a car may seem to be a peculiar place to deposit sewage sludge. But when the sludge is dry, sterile and neatly packaged, it can be a marketable commodity rather than a bothersome waste. When uncontaminated with noxious industrial materials, it is an excellent soil conditioner. Its sale produces revenue for the treatment plant, eliminates the nuisances of drying beds, lagoons and ash disposal and, at the same time, renders a service to the people of the community.

What's the best method of drying sludge?

It's the C-E Raymond Flash Drying System, a system used by communities large and small across the nation, a system proved in service and one which dries more filter cake than all other systems combined.

COMBUSTION ENGINEERING

RAYMOND DIVISION, 427 West Randolph Street, Chicago 6, Illinois

C-E C-159

Eastern Office: 200 Madison Avenue, New York 16, N. Y.
Western Office: 615 South Flower Street, Los Angeles 17, Calif.
Canada: Combustion Engineering-Superheater Ltd.

ALSO FLASH DRYING AND INCINERATION SYSTEMS FOR INDUSTRIAL WASTE DISPOSAL

(Continued from page 158)

MAX L. MINOR, manager of Dumright, Okla., has been appointed manager of Sapulpa, Okla., succeeding Add Ellyson, Mr. Minor was previously administrative aide in Wichita, Kan.

BERT S. MOFFATT, of Burlington, Vt., has been appointed manager of Bethel, Vt., succeeding Donald R. Thomas.

J. FRANCIS NEIDE, has been appointed manager of Newark, Del., succeeding J. J. Salovaara.

ERNEST L. NEUMANN, manager of Petoskey, Mich., has been appointed manager of Marquette, Mich. Mr. Neumann was previously manager at Manistee, Mich.

GEORGE K. NICOL, former manager of Hart, Mich., and Clifton Forge, Va., has been appointed the first manager of Elizabethtown, Pa.

ALLAN J. OFFENSEND, administrative assistant of Eau Claire, Wis., has been appointed the first manager of Sparta Township, N. J.

PETE A. PAKEY, manager of Woodstock, Ill., has been appointed manager of Quakertown, Pa., succeeding Ralph L. Yanish.

DWAYNE PARTAIN, manager of Portland, Mich., has been appointed manager of Brown Deer, Wis., succeeding Ervin F. Schneeberg.

W. THOMAS POTTER, assistant to the manager of the Borough of Sharpsville, has been appointed manager of Avalon, Pa., succeeding Wilfred E. Froehlich.

CARL W. RIEHN, administrative assistant of Arlington, Tex., has been appointed manager of Sulphur Springs, Tex., succeeding J. B. Henderson.

WILLIAM H. SCOVELL of Miami Beach has been appointed manager of Pompano Beach, Fla. Mr. Scovell was previously manager of Kissimmee, Fla.

GEORGE D. SMITH, assistant manager of Tacoma, Wash., has been appointed manager of Yakima, Wash., succeeding the late E. J. Allison.

GEORGE C. STUBBERT has been appointed manager of Sutherlin, Ore., succeeding Dean Smith.

WILLIAM H. TREWORGY, assistant to the manager of Skokie, Ill., has been appointed manager of Essex, Vt.

GEORGE G. ULLOM has been appointed manager of Las Vegas, Nev., succeeding A. H. Kennedy.

HOWARD W. WILLINGHAM, administrative assistant, Corpus Christi, Tex., was recently appointed the first city manager of Athens, Tex. Mr. Willingham was previously administrative aide and water distribution superintendent in Lubbock, Tex.

RICHARD H. WILSON, administrative assistant in San Antonio, Tex., has been appointed manager of Nevada, Mo., succeeding Thomas B. Hering.

CALVIN W. WOOLLUMS, manager of Whitwell, Tenn., has been appointed manager of Twinsburg, Ohio, succeeding Alexander J. Day.

ORIN F. NOLTING
Executive Director
International City Managers' Association

A Higher Bid Has to Be Justified Legally

Any city or governmental agency purchasing a tower truck, for example, would first have to draw up a specification outlining the requirements of the city. It must permit competition.

If all bidders comply with the specifications, a government must award to the low bidder unless there is a reason to disqualify him. It is my impression that some of these vehicles might include several patented features. Generally speaking a government could not specify these particular features unless they were substantiated by reports from operating departments which would indicate the advantage to the city of prescribing these patented features. Generally governments avoid specifying items which carry an exclusive patent.

Any deviation from the low bid when specifications are used must be supported by technical reports from qualified officials of the city pointing out that the best interest of the city would be served by bypassing a low bidder and taking a higher bid. Obviously such reasons would have to be approved by the legal department of a city so that if the award were challenged in the court the city would be in a position to substantiate its decision.

It seems to me that the sales organization of such a corporation should in advance of the advertising for bids attempt to sell the technical forces of the city on the advantages of shaping their specifications to secure the best possible equipment for a particular need. If they feel that the specifications are so drawn as to provide the equipment needed to fulfill a specific purpose, then they must be satisfied with the fact that the lowest bidder complying with these specifications should have the award. No city can award to a higher bidder unless such an award is substantiated by facts which would justify an award to someone other than the low bidder and which would stand up in a court of law.

C. F. SHARPE
City Manager
Hartford, Conn.

When there's a long, lawn trail a-winding . . . get Simplicity '700'
7 HP RIDING TRACTOR

Patented "Free-Floating" Mower Action Won't Scalp . . . Won't Scrape!

Velvet-smooth lawns? Simplicity's '700' Riding Tractor delivers them season after season! Three-gang mower mows 2¾ acres per hour . . . new 42" Rotary Mower follows ground contours, can't scalp, cuts within ⅝" of obstructions.

Ground-gripping stability, single-pedal clutch and brake control, convenient gear shift lever, 3 forward speeds and reverse . . . quick-change attachments for clearing snow, cutting weeds, many other jobs!

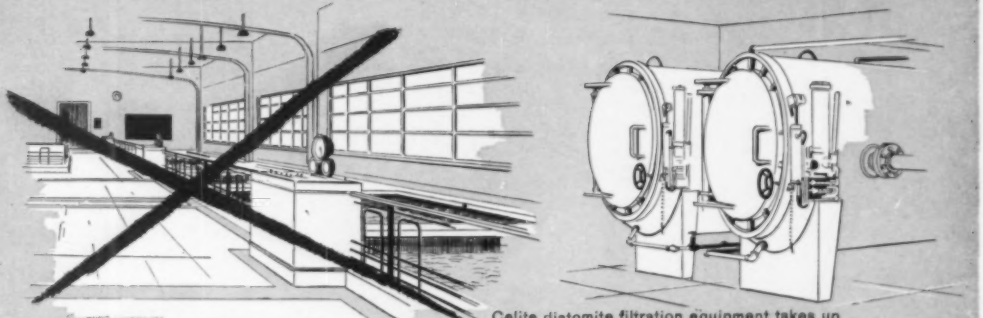
NEW '700' ATTACHMENTS FOR 1961!

46" SICKLE BAR—cuts at any angle to 30° *below* horizontal!
36" SNO-THROW—clears deep drifts quickly from walks, drives!
42" ROTARY MOWER—big-volume mower, takes 40% slopes easily!
110 Volt, 1500 Watt Mobile Generator—brings electric power to the job!

World's Most Advanced Riding Tractor

SIMPLICITY MANUFACTURING CO.
6156 Spring St., Port Washington, Wisconsin
makers of Wonder Boy Riding Mowers, Roticul Tiller-Cultivators, Simplicity Garden Tractors

1. REDUCE FILTER HOUSING SPACE 75%



Celite diatomite filtration equipment takes up only about one-quarter the space of equivalent-capacity sand filter systems.

2. USE LOWER-COST CONSTRUCTION

Smaller floor space needed for diatomite filtration permits lighter, lower-cost building methods and materials.

You save filtration construction dollars these 2 ways with Celite diatomite

One installation after another proves you need about 75% less filter housing space for equivalent capacity when you use diatomite filtration with Johns-Manville Celite*.

Also, diatomite's lighter, smaller equipment permits you to use lower cost building methods and materials. For example, a simple concrete slab with light framing and siding instead of a large reinforced concrete-and-brick building with built-in concrete filters#.

Diatomite filter equipment is so compact because it provides a much larger filter surface in proportion to size of equipment. In many cases, raw water can be filtered directly—pretreatment facilities can be eliminated. For Celite removes more suspended solids, including amoebae and algae, and turbidity is usually much lower.

Mined by Johns-Manville from the world's largest and purest commercial diatomite deposit, Celite is carefully processed for purity and uniformity. It is available in a wide range of grades for best practical balance of clarity and flow rate with any suitable filter. For further information, see your nearby Celite engineer. For free technical reprints and illustrated brochure, write to Johns-Manville, Box 14, N.Y. 16, N.Y. In Canada, Port Credit, Ont.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

#*See Comparison Studies of Diatomite and Sand Filtration* by G. R. Bell, Journal American Water Works Association, September, 1956 or write for free reprint.

JOHNS-MANVILLE

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Feb. 20-23—St. Louis, Mo.

AMERICAN CONCRETE INSTITUTE. Annual Meeting (Chase-Park Plaza Hotel). Sec.-Treas., William A. Maples, 22400 W. Seven Mile Rd., Detroit 19, Mich.

Feb. 25-Mar. 1—Los Angeles, Calif.

NATIONAL RECREATION ASSOC. California and Pacific Southwest District. Annual Conference (Statler Hotel). Dir., Field Services, Charles E. Reed, NRA, 8 W. 8th St., New York 11, N. Y.

Feb. 26-Mar. 2—Boston, Mass.

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA. Annual Meeting (Statler Hotel). Exec. Dir., James D. Marshall, 1957 "E" St., N.W., Washington, D. C.

Mar. 3-4—Ft. Worth, Tex.

TEXAS BEACH AND POOL ASSOC. Annual Meeting (Western Hills Hotel). Exec. Sec., G. R. Herzik, Jr., Texas State Health Dept., 1100 W. 49th, Austin, Tex.

Mar. 5-8—Atlantic City, N. J.

AMERICAN ROAD BUILDER'S ASSOCIATION. Annual Meeting (Chalfonte-Haddon Hall Hotel). Exec. V.P., Maj. Gen. Lewis W. Prentiss, 600 World Center Building, Washington 6, D. C.

Mar. 8-10—San Francisco, Calif.

CALIFORNIA MUNICIPAL UTILITIES ASSOC. Annual Meeting (Sheraton-Palace Hotel). Exec. Sec., F. V. Frey, 100 N. Garfield Ave., Rm. 108, Pasadena, Calif.

Mar. 12-17—College Sta., Tex.

TEXAS WATER AND SEWAGE WORKS ASSOCIATION. Annual Meeting (Memorial Student Center, Texas A&M College). Exec. Dir., G. R. Herzik, Jr., 1100 West 49th St., Austin, Tex.

Mar. 13-16—Bal Harbour, Fla.

AMERICAN CONCRETE PIPE ASSOCIATION. Annual Meeting (Americana Hotel). Man. Dir., Howard F. Peckworth, 228 No. La Salle St., Chicago 1, Ill.

Mar. 15-17—Atlantic City, N. J.

NEW JERSEY WATER POLLUTION CONTROL ASSOC. Annual Meeting (Traymore Hotel). Sec., Anthony T. Leabey, P. O. Box 32, West Trenton, N. J.

Mar. 19-21—New Orleans, La.

SOUTHERN ASSOCIATION OF CHEMICAL ORGANIZATION EXECUTIVES. Annual Meeting (Sheraton-Charles Hotel). Pres., Fred Pool, East Texas Chamber of Commerce, Longview, Tex.

Mar. 19-22—Little Rock, Ark.

ARKANSAS WATER AND SEWAGE CONFERENCE. Annual Conference (Marion Hotel). Exec. Sec., C. W. Oxford, Univ. of Arkansas, Fayetteville, Ark.

Mar. 22-24—Chicago, Ill.

AMERICAN WATER WORKS ASSOC.—Illinois Section. Annual Meeting (LaSalle Hotel). Exec. Sec., Dewey W. Johnson, 3440 Prudential Plaza, Chicago, Ill.

Mar. 22-24—Atlantic City, N. J.

ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Meeting (Traymore Hotel). Exec. Sec., Kenneth D. Rice, 1035 Parkway Ave., Trenton, N. J.

Mar. 27-30—Lafayette, Ind.

PURDUE ROAD SCHOOL. Annual Meeting (Memorial Center, Purdue Univ.). Exec. Sec., J. F. McLaughlin, Civil Engineering, Purdue University, Lafayette, Ind.

Mar. 29-31—Atlantic City, N. J.

NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION. Annual Meeting (Hotel Haddon Hall). Sec., Bailey B. Pepper, Agricultural Experiment Station, New Brunswick, N. J.

***Apr. 4-6—Jacksonville, Fla.**

NATIONAL RECREATION ASSOCIATION—Southern Section. Annual Conference (George Washington Hotel). Dir., Fld. Serv., Charles E. Reed, NRA, 8 W. 8th St., N. Y. 11, N. Y.

***Apr. 4-7—Cedar Rapids, Iowa**

NATIONAL RECREATION ASSOCIATION — Midwest Section. Annual Conference (Roosevelt Hotel). Dir., Field Services, Charles E. Reed, NRA, 8 W. 8th St., N. Y. 11, N. Y.

(Continued on page 165)

NEW DESIGN! NEW EFFICIENCY!

Asphalt men designed it. Asphalt men tested it. The new Standard Asphalt Distributor has been field tested for two years—on every type and grade of asphalt available, over three million gallons in all.

MODEL 424-56 PRESSURE DISTRIBUTOR

New power, New pump, All new features—as follows: A new "Econo-bar" spray bar in addition to the famous Standard Steel "Miracle" spray bar. New hydraulic spray bar lift. More convenient, easier to operate controls. Shorter, simplified piping to reduce heat bleed-off.

The Model 424-56 is built in 1000, 1250 and 1500 gallon capacities as standard and can be furnished in other capacities, either truck or semi-trailer mounted.

Write for Catalog #RS1256 or see your dealer.

OTHER PRODUCTS OF STANDARD STEEL

ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS . . . SHELVING HARDWARE . . . AND AGRICULTURAL EQUIPMENT

Built to the Highest Standard

Standard Steel Works, Inc. NORTH KANSAS CITY, MO. PD-157

Limited slip differentials . . . produced by Dana Corporation . . . are pulling new cars and trucks through mud and snow

The year 1961 will see fewer vehicles stuck in the mud—and snow. For almost every manufacturer of cars and light trucks offers the limited slip differential—made by Dana Corporation—as factory installed equipment.

The limited slip differential—produced by Dana Corporation . . .

- stops wheel spinning on ice or slick pavement, if one of the wheels can grip the road.
- enables your car or truck to pull out of sticky mud or loose sand if either wheel has traction.
- guards against dangerous swerves resulting from "wheel hop" on rough, bumpy roads.

Because of its safety and convenience features the new limited slip differential could prove as useful and as popular as the automatic transmission. To men who watch costs—the fleet operators—the limited slip differential is a feature that pays for itself in just one or two days of bad weather. Equipped with limited slip differentials at moderate cost, their fleets can maintain service and stay on schedules in the worst winter snows and the heaviest spring rains.

Next time you buy a car or truck, ask your dealer to demonstrate the advantages of the limited slip differential. Sold under many names—it's manufactured by Dana Corporation.

WRITE Dana for free copy of booklet that describes how and where the limited slip differential works.

DANA Spicer

DANA CORPORATION

Toledo 1, Ohio

Conventions—When and Where

(Continued from page 163)

***Apr. 4-7—Tulsa, Okla.**

NATIONAL RECREATION ASSOCIATION—Southwest Section. Annual Conference (Hotel Tulsa). Dir., Field Services, Charles E. Reed, NRA, 8 W. 8th St., New York 11, N. Y.

***Apr. 5-8—Philadelphia, Pa.**

AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION. Annual Meeting (Hotel Sheraton). Exec. Dir., Robert J. M. Matteson, 6042 Kimbark Ave., Chicago 37, Ill.

***Apr. 5-6—Beckley, W. Va.**

AMERICAN WATER WORKS ASSOC.—West Virginia Section. Annual Meeting (Hotel Beckley). Sec., Hugh W. Hetzer, Design Engineering, Union Carbide Chemicals Co., P. O. Box 8361, S. Charleston 3, W. Va.

***Apr. 6-7—Durham, N. Car.**

SOUTHERN MUNICIPAL AND INDUSTRIAL WASTE CONFERENCE. Annual Conference (Duke University). Sec., Dr. Edward H. Bryan, Assoc. Prof. of Civil Engineering, Duke University, Durham, N. Car.

***Apr. 6-8—Helena, Mont.**

AMERICAN WATER WORKS ASSOCIATION—Montana Section. Annual Meeting (Placer Hotel). Sec. H. W. Clarkson, c/o State Board of Health, Helena, Mont.

***Apr. 9-12—Tacoma, Wash.**

NATIONAL RECREATION ASSOCIATION—Pacific Northwest Section. Annual Conference (Winthrop Hotel), Dir., Fld. Ser. E. Reed, NRA, 8 W. 8th St., N. Y. 11, N. Y.

***Apr. 11-13—Buffalo, N. Y.**

AMERICAN WATER WORKS ASSOC. — New York Section. Semi-Annual Meeting (Statler Hilton Hotel). Kimball Blanchard, c/o Neptune Meter Co., 22-22 Jackson Ave., Long Island City 1, N. Y.

***Apr. 12-14—Hutchinson, Kan.**

AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Annual Meeting (Baker Hotel). Sec.-Treas., H. W. Badley, 119 W. Cloud, Salina, Kan.

***Apr. 12-14—Hutchinson, Kan.**

KANSAS WATER POLLUTION CONTROL ASSOC.—Annual Meeting (Baker Hotel). Sec.-Treas., Howard F. Saiger, 1900 E. 9th St., Wichita, Kan.

***Apr. 14-17—Muskegon, Mich.**

NATIONAL RECREATION ASSOC.—Great Lakes Section. Annual Conference (Occidental Hotel). Dir., Field Services, NRA, 8 W. 8th St., New York 11, N. Y.

***Apr. 18-20—Brookings, S. Dak.**

HIGHWAY SHORT COURSE. Annual Meeting (Union Building). Sec., Emory E. Johnson, Head of the Department of Civil Engineering, South Dakota State College, Brookings, S. Dak.

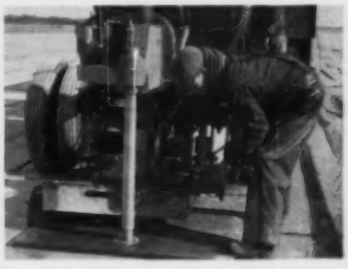
***Apr. 19-21—Lincoln, Neb.**

AMERICAN WATER WORKS ASSOC. — Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., Joseph J. Rossbach, Metropolitan Utilities, 18th & Harney Sts., Omaha, Nebr.

(Continued on page 167)

TRUCO® DOES IT AGAIN!

80% cost reduction in airport runway lighting by installation of pancake lights



Above: Drilling holes for light units.
Left: Cutting slot raceways for wiring.

Truco "pancake" diamond drill on Truco Model G, gasoline powered, truck-mounted drill rig cut holes for light units 6" dia. x 1" deep. Truco Concrete Saw with 14" Truco diamond blades sawed miles of slots for wiring raceways in both bituminous and portland cement concrete runways. Even greater savings now possible using new Tru-Vac® Vacuum Pad to anchor drill rig in seconds. Write for our new Catalog.

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LOW FIRST COST! LOW MAINTENANCE COST!

Midwest
TAK-A-PART PICNIC TABLES

WALK-THRU DESIGN No braces or frames to step over.

SLIDE-EASY, SKID-TYPE FEET . . . Protect turf from damage when moved.

QUICK TO ASSEMBLE • DISMANTLE IN MINUTES • STORE FLAT

- **AUTOMOTIVE-TYPE FINISH** of high baked green enamel.
- **RIGID, STURDY, NON-TIPPING** . . . 1½" heavy welded steel tubing.
- **SUPPORT ANY LENGTH TABLE** . . . Use 2 frames for tables up to 10 ft.; third frame for longer tables.
- **BUY METAL PARTS ONLY** and use your own lumber.
- **OR BUY TABLES COMPLETE** with lumber precut and precision drilled.

Write for FREE Catalog and Prices

Exclusive **KIDDIE TABLE**

Same walk-in design and skid-type feet. A delight for little tots.

- **COMBINATION BENCH 'N TABLE** Converts quickly from 6' bench to 6' table with attached bench.
- **STURDY 4-FT. BENCH** Counter balanced frame of 1⅜" welded steel tubing.

Big Discounts on quantity orders

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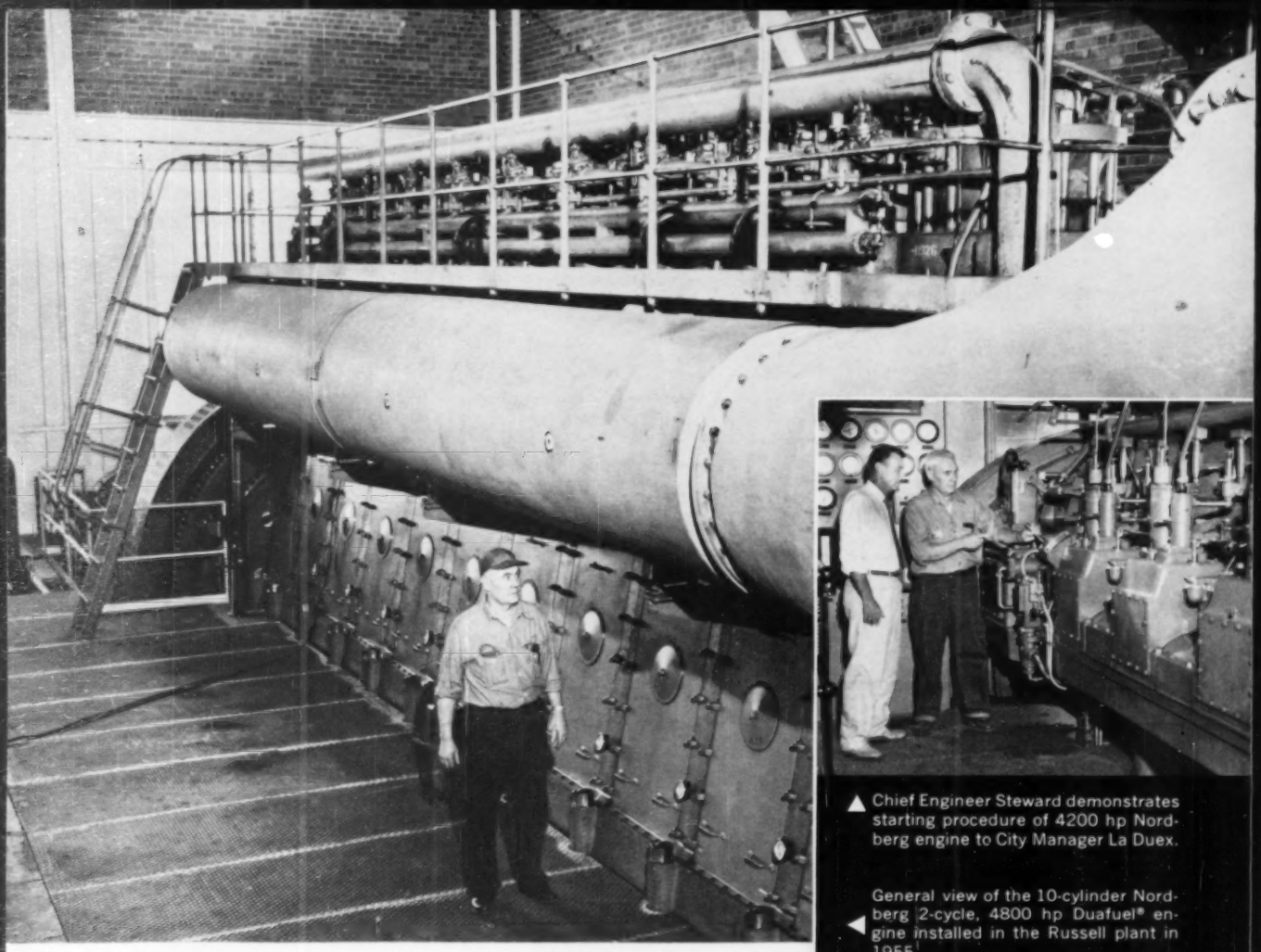
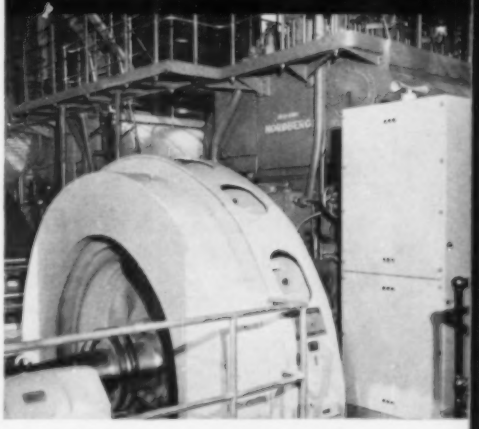


▲ Chief Engineer Steward demonstrates starting procedure of 4200 hp Nordberg engine to City Manager La Duex.

◀ General view of the 10-cylinder Nordberg 2-cycle, 4800 hp Duafuel® engine installed in the Russell plant in 1955.

▼ The 4200 hp Nordberg Duafuel® unit was installed in 1958. The two Nordberg engines provide 9000 hp to bring plant capacity to 16,220 hp.



Municipal Power Plant Pays Cash For 4200 HP Engine from Savings Made on 4800 HP Unit Installed in 1955

City Manager John La Duex, Chief Engineer Dewey Steward, and the entire City of Russell, Kansas can be justifiably proud of their municipal power plant. It is the largest municipal diesel plant in Kansas, and in fact, the largest engine generating plant in the state.

This municipally owned and operated diesel power plant began operation in 1910, in the early years of the town's development. Steady progress and growth have characterized the efficient operation of this plant to handle its ever increasing demand for electrical power.

Two large Nordberg Duafuel® engines—a 4800 hp unit installed in 1955 and a 4200 hp unit installed in 1958—are helping to establish impressive records of efficiency and economy. Together, these two reliable Nordberg engines have cut the plant average fuel-lube cost to just 3.34 mills per kwh. The fuel cost of the new unit is 2.5 mills per kwh.

The municipal power plant at Russell, Kansas is indeed evidence of why taxpayers vote "YES" for modern diesel power.

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Conventions—When and Where

(Continued from page 165)

***Apr. 20-22—Chandler, Ariz.**
ARIZONA SEWAGE AND WATER WORKS ASSOC. —Annual Meeting (San Marcos Hotel). Sec.-Treas., A. D. Cox, Jr., P. O. Box 5347, Phoenix, Ariz.

***Apr. 22-25—Colorado Springs, Colo.**
AMERICAN ASSOC. OF AIRPORT EXECUTIVES. Annual Meeting (Broadmoor Hotel). Exec. Sec., F. R. Hoyt, P. O. Box 767, Wilmington, Del.

***Apr. 23-26—Greenville, S. Car.**
AMERICAN WATER WORKS ASSOCIATION—Southeastern Section. Annual Meeting (Hotel Poinsett). Sec.-Treas., N. M. de Jarnette, 1081 Lanier Blvd., N. E., Atlanta 6, Ga.

***Apr. 25-27—San Antonio, Texas.**
AMERICAN PUBLIC POWER ASSOCIATION. Annual Meeting (Granada Hotel). Gen. Mgr., Alex Radin, 919 18th St., N.W., Washington 6, D. C.

***Apr. 26-29—Victoria, B. C., Can.**
AMERICAN WATER WORKS ASSOCIATION—Pacific N. W. Section. Annual Meeting (Empress Hotel). Sec.-Treas., Fred D. Jones, W. 2108 Maxwell Ave., Spokane 11, Wash.

***Apr. 26-29—Santa Monica, Calif.**
CALIFORNIA SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Hotel Miramar). Sec.-Treas., Robert L. White, Box 231, Burbank, Calif.

***Apr. 30-May 3—Washington, D. C.**
CHAMBER OF COMMERCE OF THE U. S. Annual Meeting (Chamber Building). Exec. V. Pres., Arch N. Booth, 1615 H St., N. W., Washington 6, D. C.

Apr. 30-May 4—Denver, Colo.
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Meeting (Hotel Denver Hilton). Exec. Dir., Dennis O'Harrow, 1313 E. 60th St., Chicago 37, Ill.

***May 15-18—New York, N. Y.**
INTERNATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Manhattan Hotel). Sec.-Treas., Arthur J. Shinner, Town Hall, Brookline 46, Mass.

***May 15-19—Detroit, Mich.**
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Hotel Statler). Asst. Gen. Mgr., Chas. S. Morgan, 60 Batterymarch St., Boston 10, Mass.

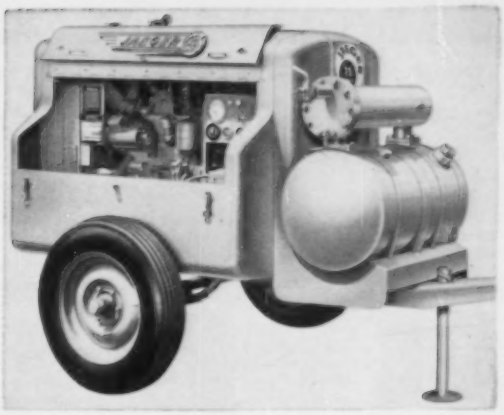
June 4-9—Detroit, Mich.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Cobo Hall). Sec., Raymond J. Faust, 2 Park Avenue, New York 16, N. Y.

Sept. 24-27—Minneapolis, Minn.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Meeting (Municipal Auditorium). Exec. Dir., Robert D. Bugher, 1313 East 60th Street, Chicago 37, Ill.

Sept. 24-28—Poland Spring, Me.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Poland Spring House). Sec., Joseph C. Knox., 73 Tremont St., Boston, Mass.

Oct. 9-12—Milwaukee, Wisc.
WATER POLLUTION CONTROL FEDERATION. Annual Meeting (Milwaukee Auditorium and Schroeder Hotel). Exec. Sec., Dr. Ralph E. Fuhrman, 4435 Wisconsin Ave., Washington, D. C.

75 cfm operates a heavy breaker at top efficiency.



All the air you need for an 80 lb. breaker

JAEGER ROTARY "75"

Easy starting in coldest weather because it has no pistons to drag. Costs less than the reciprocating model it replaces, yet runs smoother, delivers much cooler air, has fewer parts. Fully equipped. Big tool boxes, automatic blow-down valve. Ask your Jaeger distributor or send for Catalog.

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THERE IS NO SUBSTITUTE
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Insist on the lights with Power to spare . . . when you need it most!
'sports-type' lights
⅛ the area
VS.
5 TIMES MORE AREA
"Portalites" cover FIVE TIMES the area of 'sports-type' lights with the same or greater intensity! Available with battery-pack specifically designed for emergency lighting . . . gives from 150% to 400% of the light at less cost! Also rechargeable battery types.
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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Capital Budgeting

MANUAL ON CAPITAL BUDGETING—*Tennessee State Planning Commission, C1-118 Cordell Hull Building, Nashville 3, Tenn.* 1960. 64*pp.* $1.

The Tennessee Planning Commission tells its cities how to prepare municipal capital budgets covering a period of six years.

The six-year capital budget, the Commission warns, covers only the immediate six-year period of the long-range capital improvements program. It should not be confused with a 20- or 30-year program.

The text is practical, includes even recommended forms and charts, has little that restricts its application to Tennessee cities alone. It contains the Tennessee Municipal Public Works Act which cities in other states may view only out of curiosity. However, it lists and explains federal programs available, which should interest everyone.

standardize for economy
POWER MOWER becomes a sweeper, snow blower, or blade dozer by adding attachments. Made by Kut-Kwick Corp., Brunswick, Ga., it relies on a 9.2-hp Wisconsin Engine for year-around use.
use it now and all year long
–it's WISCONSIN-powered

One basic Wisconsin-powered unit with attachments is all you need to save time and money on year-around jobs. As one user puts it, "the 9.2-hp Wisconsin just plays with the job" — in knee-deep snow or hip-high rank growth, in sub-zero cold or in 140° F. heat.

The engine is built to stand up under constant use — and to be on-call when needed. It offers such sure-power features as rugged torque to shrug off shock loads, and tapered roller main bearings and beefed-up shaft to absorb all thrusts. The result: the most service with the least care.

It pays in the long run to standardize on Wisconsin power, 3 to 56 hp. Electric starting available for all models. Get Bulletin S-249. Write Dept. U-11.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines U-263

"No Damn Good"

THE SQUEEZE—*By Edward Higbee. William Morrow and Company, Inc., 425 Park Avenue South, New York 16, N. Y.* 1960. 348*pp.* $5.95

A smug and superficial text that reminds us of that cynical little cartoon character sitting sullenly in the corner saying, "People are no damn good." The essence of Dr. Higbee's remarks is that cities are no good, and apparently New York City in particular.

He labels local leaders as "politicians and bureaucrats who, too often, are amateur hacks in the serious business of managing property and organizing space." He apparently never read the *Fortune* study which reported that municipal leaders in our big cities have and use executive talents that compare well with the best of business leaders.

He implies a terrific shortage of land area and then states that the whole population of the United States could be placed on New York's Central Park and Bronx Park.

He devotes an entire chapter to the ostentatious advice of "improving the space between the ears." Rather than quote Priscilla's famous reply to John Alden, we would simply counsel that the good doctor sit back and relax.

Of course, on the banks of the Mississippi near Dubuque, Iowa, there is a beautiful Trappist monastery occupied by a religious order that takes vows of perpetual silence.

Subdivision Guide

SUGGESTED LAND SUBDIVISION REGULATIONS—*Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.* 1960. 68*pp.* 50 *cents.*

Anyone looking for a simple, easy-to-follow guide on at least the simpler types of subdivisions need look no further. A city patterning its residential growth of single-family homes to the recommendations here will avoid most of its residential problems.

What additional is needed are similar texts on garden apartments, commercial and industrial areas. Guidance on the so-called industrial parks would be a big help.

Subgrade Compaction

SOIL COMPACTION AND PROOF-ROLLING OF SUBGRADES: HIGHWAY RESEARCH BOARD BULLETIN 254, NATIONAL ACADEMY OF SCIENCES—*National Research Council, 2101 Constitution, Washington, D. C.* 1960. 35*pp.* $1.

Four separate papers with attendant discussion dealing with compaction, proof-rolling, hydraulic fills and liquid-limit determinations. The authors warn that proof-rolling is not a cure-all; adherence to compaction specifications during construction remains a necessity.

Los Angeles

LOS ANGELES: FROM MISSION TO MODERN CITY *By Remi Nadeau. Longmans, Green & Co., Inc., 119 West 40th Street, New York, N. Y.* 1960. 302*pp.* $5.95.

A rather colorful account of the growth of the fourth largest city in the nation, in which the author argues that it grew too fast and a bit unwholesomely. The only portions that would have any real interest to students of local government are the chapters on the development of its spectacular water supply, its highly successful municipal power system, and its famous smog problem. It has colorful but not par-

ticularly enlightening accounts of traffic problems and "urban sprawl," if we may use that emotional and subjective term, and generally paints a rather dismal picture of the City of Angels. We imagine that Los Angeles will survive.

Air Pollution

NATIONAL GOALS IN AIR POLLUTION RESEARCH —*Surgeon General's Ad Hoc Task Group On Air Pollution Research Goals, U. S. Department Of Health, Education, And Welfare, Public Health Service, Washington 25, D. C.* 1960. 39pp.

A ten-expert committee recommends that, to combat air pollution, we first must determine:

- The true effects of air pollution on human health.
- The effects on the nation's agricultural economy.
- Better ways of measuring the economic loss from air pollution.
- Better ways of measuring and identifying air pollution at its source and in the air.
- Better techniques for assessing meteorological factors affecting air pollution.
- More about the formation of new pollutants from reactions in the air.

Residence and Race

RESIDENCE AND RACE—*By Davis McEntire. University of California Press, Berkeley 4, Calif.* 1960. 409 pp. $6.

This book travels the familiar route to discuss a difficult and painful chapter in the development of our nation. Certainly no nation in the world has ever faced problems exactly like these. And we believe that when history writes its account of how the American people set about to solve these problems, it will do so in words of admiration.

Peculiarly enough, the author feels that while racial segregation is wrong, socio-economic segregation, based on income, education level, and social outlook, is right and proper.

One Tenth of a Nation

ONE TENTH OF A NATION—*By Robert M. Lichtenberg. Harvard University Press, Cambridge 38, Mass.* 1960. 326 pp. $6.75.

Even though New York City spawns industry that follows the advice of Horace Greeley and leaves to go west—and south —the author feels that total employment in the New York area market will continue to grow about as fast as that of the nation at large. The industries that show greatest growth in the New York region are apparently securities markets, executive offices, and manufacturers of lightweight products.

This is the seventh volume about the New York Metropolitan Region, undertaken by the Graduate School of Public Administration, Harvard University, for the New York Regional Plan Association, Inc.

ADMINISTRATION AND GOVERNMENT

MASSACHUSETTS—Handbook for Massachusetts Selectmen. A digest of the more important laws and sections of law pertaining to the office of selectmen, New England's form of government by committee. By Edwin A. Gere, Jr., and Robert P. Bolan. Massachusetts Selectmen's Association, 6 Beacon Street, Boston, Mass. 1960. 86 pp. $1.

PHILADELPHIA, PA.—Philadelphia and Constitutional Revision. An examination of the various provisions of the Pennsylvania Constitution which affect the interest of Philadelphia. Bureau of Municipal Research and Pennsylvania Economy League, Liberty Trust Building, Philadelphia 7, Pa. 1960. 95 pp. $2.

PLANNING, ZONING, HOUSING

ELMIRA, N. Y.—Future Development Patterns. Community Planning Associates, Inc., 1241 Parkway Ave., P. O. Box 206, West Trenton, N. J. 1960. 68 pp. $50.

LOS ANGELES, CALIF. — 1959 Accomplishments. City Planning Commission, Municipal Building, Los Angeles, Calif. 1960. 50 pp.

MENOMONEE FALLS, WIS.—General Plan for Community Development. Nelson Ball & Associates, 1733 North Farwell Ave., Milwaukee 2, Wis. 1960. 124 pp. $5.

MINNEAPOLIS, MINN.—Land for Industrial Growth. Publication No. 116, Industrial Study Series No. 3. City of Minneapolis Planning Commission, City Hall, Minneapolis, Minn. 1960. 17 pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES
from December 6th, 1960, to January 5th, 1961

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
12/ 6/60	Buffalo, N. Y.	7,161	Bond Anticipation	1	1.75	1.75
12/ 6/60	Detroit Mich	3,000	Street Railway	5½	3.00	2.99
12/ 6/60	Riverside, Calif., Parking Dist.	1,650	Parking	12½	....	4.14
12/ 7/60	Davenport, Iowa	650	Corporate Purpose	10¾	3.00	2.94
12/ 7/60	Pittsfield, Mass.	4,000	Sewer, School, Parking, Water	10	3.00	2.94
12/ 7/60	Wilmington, Del	7,050	Street, Parking, Water, Other	13	3.10	3.09
12/ 8/60	East Lansing, Mich	2,500	General Obligation, Sewer	....	....	3.77
12/13/60	Los Angeles, Calif.	7,000	Hospital Facilities	14	3.50	3.35
12/13/60	Pinellas Co., Fla.	6,000	Building Tax Anticipation	10½	3.95	3.92
12/14/60	Indianapolis, Ind.	5,130	Temporary Loan	..	2.75	2.75
12/14/60	Tonawanda, N. Y.	3,458	Improvement	11	5.00	5.00
12/14/60	Western Mun. Water Dist., Calif., (Riverside Co.)	1,150	Water	19½	5.00	5.00
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12/19/60	Piqua, Ohio	1,000	Waterworks Improvement	11¼	3.25	3.16
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12/27/60	New York, N. Y.	10,000	Tax Anticipation	½	2.13	2.13
12/28/60	Hartford Co., Metro Dist.	2,800	Water Supply and Transmission	20½	3.25	3.23
12/29/60	Wayne Co., Mich.	1,100	Metropolitan Water Supply	....	....	3.86
1/ 4/61	Wichita Co., Tex.	750	Road	....	....	3.34
1/ 5/61	Minneapolis, Minn.	2,000	Metropolitan Sports Area	13½	3.00	3.00

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In a series of ads to follow, KERN, makers of the finest surveying instruments in the world, will expand on various aspects of the "fundamental" in surveying instruments.

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FUNDAMENTAL SURVEYING EQUIPMENT
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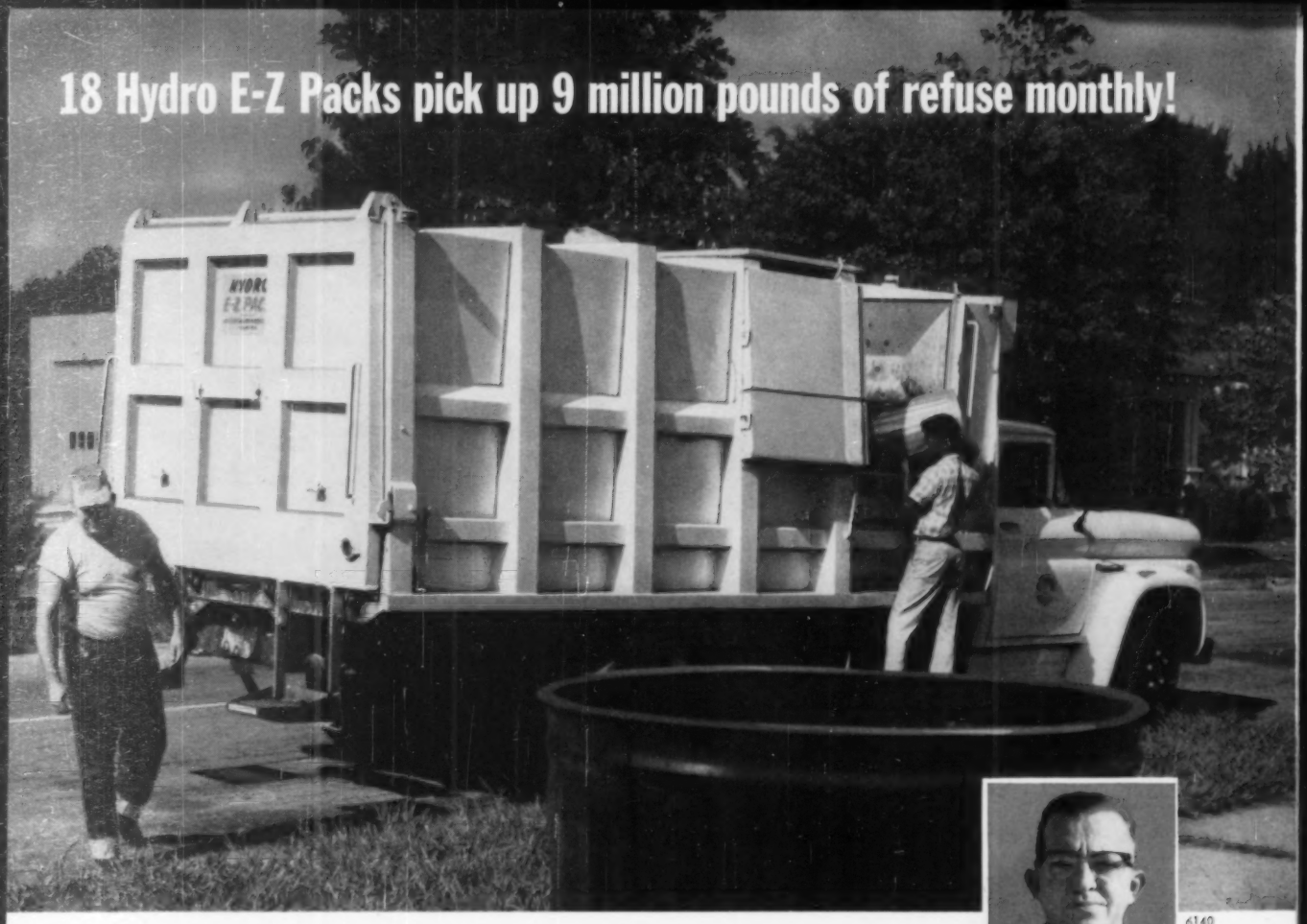
18 Hydro E-Z Packs pick up 9 million pounds of refuse monthly!



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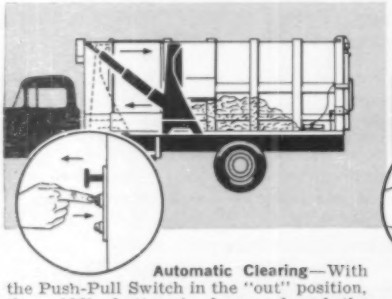
WALTER E. MIXON, JR.
Superintendent,
Dept. of Sanitation
Jackson, Mississippi

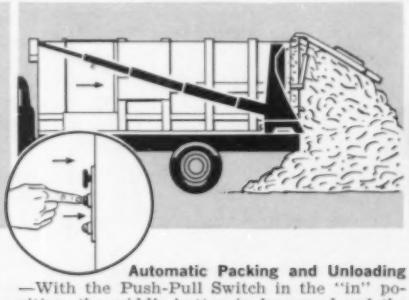
"We've increased pickups more than 50% ...and at a savings of $50,400 per year."

The city of Jackson, Miss., is served by a fleet of 18 Hydro E-Z Packs which pick up more than 9 million pounds of refuse every month. To handle this huge refuse pickup, Walter E. Mixon, Jr., Superintendent of the Jackson Department of Sanitation, chose Hydro E-Z Pack. "Hydro E-Z Packs do a more thorough and complete job than any other type unit we tested," says Mixon. Jackson's E-Z Pack fleet *services more than* 21,000 homes and 1600 businesses. What's more, the annual operating cost of their refuse removal program has been reduced $50,400. A savings of $2800 for each E-Z Pack in operation. Trips to the dump have been reduced too, because of the high compaction rate of 76,600 pounds exerted on the load in every E-Z Pack.

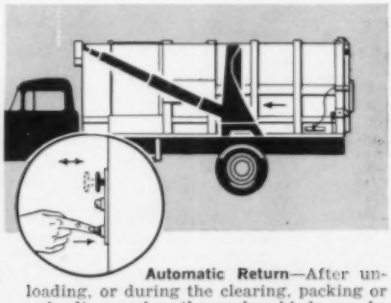
Refuse removal problem? See your Hydro E-Z Pack Distributor or send for free copy of "The Big Squeeze."



Automatic Clearing—With the Push-Pull Switch in the "out" position, the middle button is depressed and the packer blade clears the loading hopper area; then returns to its original position, automatically



Automatic Packing and Unloading—With the Push-Pull Switch in the "in" position, the middle button is depressed and the packer blade moves to the rear of the body exerting pressure to compact the load. To unload, the same procedure is followed.



Automatic Return—After unloading, or during the clearing, packing or unloading cycles, the packer blade can be returned to original position by depressing lower button regardless of setting of Push-Pull Switch.

Hydro E-Z PACK

HYDRO E-Z PACK®

DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO U.S.A.

Compact Truck Line a Natural for Cities

A new line of trucks and tractors engineered for use in heavily congested city traffic and terminal areas, has been introduced by The White Motor Co., Cleveland 1, Ohio.

Because cab, drive components and front wheels have been engineered into the shortest wheelbase in the industry (74″ to 96″ for the tractor and 114″ to 150″ for the truck), these new Compacts can handle more payload than conventional vehicles within the same overall length. Optional components up to 28,000 pounds gross vehicle weight permit a wide range of applications.

Curb to curb turning cycle is made possible by a front wheel cut angle of approximately 50° in either direction and is smaller by 11 feet for the tractor and nearly 13 feet for the truck as compared to conventional vehicles.

Cab is of low step-up design with wide piano hinged doors, and full width vision to speed operations, increase safety, and reduce driver fatigue. Cab tilting mechanism incorporates use of a torsion bar to provide counter balancing and permit cab to be raised manually.

Standard engine for the tractor is the White Super Mustang 6-145A and the 6-130A for the truck. Unit options are available for both tractor and truck. All are of overhead valve construction, with wet sleeve design.

For additional information, write The White Motor Co., 842 E. 79th St., Cleveland 1, Ohio.

Functionally designed for municipal service, the new White Compact truck can be turned in either direction with a front wheel cut up to nearly 100% greater than conventional units.

Fire Fighter for Inland Water Ways

A fire and rescue boat designed primarily for rivers, harbors and inland water ways can be hauled anywhere on a trailer or helicopter.

It is 19 feet long, travels 40 miles per hour, pumps 2,500 gallons per minute and has no propeller or rudder. It is operated on jet stream of water.

This boat is built by Fire & Rescue Boats, Inc., 2525 Ashland Ave., Chicago 8, Ill.

For Larger Aluminum Poles

Union Metal announces the addition of cold rolled aluminum poles to its familiar line of spun aluminum poles. This will double the company's present production. It also permits production of poles of larger diameter by cold rolling aluminum sheets.

Cold rolling uses strain hardening aluminum alloy available only in sheets. Aluminum used in cold rolling is Aluminum Association Alloy 5052 and the tubing for spinning poles usually is Aluminum Association Alloy 6063.

The manufacturer reports an increasing demand for poles of larger diameters. Sizes of aluminum tubing are limited, but poles of larger diameters can be cold rolled by the method used in fabricating steel poles. For new sizes, write The Union Metal Manufacturing Co., Canton 5, Ohio.

Computer Service for the Smallest

A computer service making electronic data processing available to units as small as a neighborhood store with one cash register—and all municipalities are larger than that—has been opened by the National Cash Register Co., 50 Rockefeller Plaza, New York, N. Y.

Equipped with a new $75,000 computer, the NCR 390, the service will prepare inventory reports, payrolls, bills and other records. In less than one hour, for instance, it can figure the earnings and deductions for 250 employees, write their pay checks and prepare a complete payroll record for each individual.

Larger data processing centers in New York, Los Angeles and Dayton, Ohio will use the large-scale NCR 304 EDP system.

Driver Training for High School Students

Nashville Police Chief Douglas E. Hosse and City School Superintendent W. H. Oliver, Mayor Ben West, and four students from Howard High School try out the new Drivotrainer units recently acquired for use in Nashville high schools.

A major step toward reduction of teenage driving accidents has been taken in Nashville recently with the purchase of 24 Aetna Drivotrainers, manufactured by Rockwell Manufacturing Company for use in high school driver education.

The Drivotrainers are simulated small cars mounted in trailers containing 12 units each. The student sits in the trainer and learns to use controls duplicating those found in a real automobile. Motion pictures projected on a screen create every actual condition a driver might encounter. A control console at the rear of the trailer automatically records student actions and responses.

In officially accepting the train-

(Continued on page 173)

FRANKLIN FABRICS UNIFORMS

373

Range 373 has symbolized the top quality Police and Fire Department Uniform Fabrics for over 25 years.

It is made in all weights for all climates.

Stock dyed
2 ply
Fast Colors
Uniformity of Shade

Corresponding qualities in worsted whipcords and elastiques; gabardines and tropicals in either 100% worsted or worsted/dacron blends.

TO BE SURE, SPECIFY

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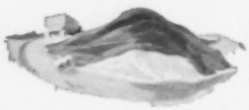
for additional information write to—
David E. Singer, Sales Agent
FRANKLIN WORSTED COMPANY
40 East 34th St., New York 16, N. Y.

Keep pavements bare all winter with Solvay Calcium Chloride

—SALT MIXTURES



This winter use the method of leading turnpikes that achieve "no shut-down" records despite the severest weather. Combine Solvay® Calcium Chloride with salt. Make sure you have ample stocks on hand, at money-saving bulk rates.* It can be stored alone, or mixed with salt, outdoors under tarpaulin covers, in indoor sheds or covered bins.

Bulk handling of Solvay Calcium Chloride is a one-man operation, both in loading and application. It can be used economically by large and small highway departments.

Calcium chloride-salt mixtures are effective at all temperatures and humidities. While salt's best range is 25-32°F., calcium chloride speeds melting at all temperatures, even down to below zero . . . provides the moisture salt needs to act. Calcium chloride liberates heat as it melts ice, which helps salt work faster. When you combine the two, applications can be lighter and less frequent. This reduces chemical consumption and lowers cost.

For *instant* skidproofing of icy surfaces, treat abrasives with Solvay Calcium Chloride. They hold fast in wind and traffic at all temperatures.

**Also available in moistureproof bags.*

Write us now. Request "ice control data." If you are interested in applying bulk handling to your set-up, ask for a Solvay representative to call. No obligation!

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

SOLVAY branch offices and dealers are located in major centers from coast to coast.

(Continued from page 171)

ing devices, City School Superintendent W. H. Oliver commended the Mayor and City Councilman Charles E. Bramwell, Sr., who introduced the ordinance authorizing purchase of the equipment. Total cost of the trainers and trailers amounted to $51,156. Superintendent Oliver said that Nashville is probably the only city in the southeast now providing driver training throughout the entire high school system.

Mayor West, who has long advocated a driver training program for all high school pupils, pointed out that Nashville's automobile regulatory fee of $10 per car made it possible to buy the Aetna Drivotrainers. The Drivotrainer is manufactured at the ROCKWELL MANUFACTURING COMPANY plant in JAMESTOWN, N. Y.

All-Purpose Vehicle

The Scout works well as a small pick-up truck (left). Full-length one-piece steel Travel-Top, available as optional equipment, encloses pick-up body and passenger compartment (right), adapting it to other municipal uses.

Municipalities will no doubt find numerous ways to employ the Scout, a small all-purpose vehicle designed for low-cost transportation of passengers and cargo, just introduced by the motor truck division of International Harvester Co.

In addition to a 3-person-passenger compartment with detachable steel top, fold-down windshield, removable door glass and removable doors, the Scout also has an integral 5-foot-long pickup body. Wheelbase is 100 inches; overall length, 12⅝ feet.

Both two-wheel and four-wheel drive models are offered, plus such equipment as snowplow, winch, power take-off and extra gas tank. The Scout's IH-built Comanche engine, a 152-cubic inch, 4-cylinder valve-in-head powerplant, develops 90-hp at 4,400 rpm.

For complete details, write INTERNATIONAL HARVESTER CO., 180 MICHIGAN AVE., CHICAGO 1, ILL.

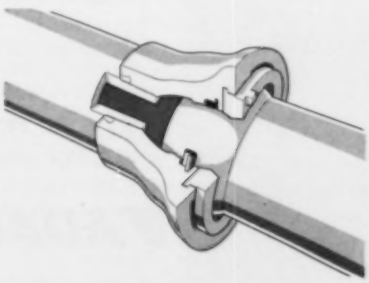
Usiflex Boltless Flexible Joint Pipe

The joint provided with Usiflex pipe is a simple, rugged, bottle-tight flexible joint for cast iron pipe which is assembled without the use of bolts. Locked against pull-out, the joint is ideally suited for underwater installations where the high cost of equipment and manpower emphasizes the importance of ease and speed of assembly as well as the utmost in reliability.

No bolts, nuts or wrenches are required to make up the joint. The L-shaped gasket is self-sealing rather than having a seal that depends on an exterior force from a gland. A heavy section steel retainer ring with lugs is inserted in the internally lugged bell and turned so that the lugs interlock and lock the joint against pull-out.

Usiflex boltless flexible joint pipe is furnished in sizes 4-inch through 24-inch in nominal laying lengths of 18 feet. Each length of pipe is cast centrifugally with a ball on one end and plain end on the other. The bell of Usiflex pipe is cast separately of high strength cast iron.

(Continued on page 175)



NCG® wherever emergency strikes...

*Handy** Resuscitators automatically breathe when the breath of life is gone.

The Handy Resuscitator does *three* important things:

1. It automatically inhales and exhales, adjusting automatically the depth of respiration to the patient's lung capacity, for an adult, child or even *infant*.
2. It can be quickly switched to "Inhalation" to supply oxygen to be absorbed by the spontaneous respiration of the patient.
3. It provides sufficient suction as an Aspirator to remove obstructing material from the throat, such as water, mucus, etc.

"BE PREPARED" for drownings, carbon monoxide poisonings, heart attacks, electric shock, strangulation, asthma, asphyxia of the new-born.

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and here is why-

Centrifugally cast without chill under the modern DeLavaud process, APCO PIPE is *far stronger, far more resistant to impact.* It is concentric, even and uniform in wall thickness with clean, dense-grained metal sections completely free of casting stresses.

With the fast assembly ALTITE® JOINT it is easy, simple, and inexpensive to install. Available from large stocks for prompt delivery in sizes 3″ to 24″ in modern long lengths. Bell and spigot, roll-on and mechanical joint.

ALTITE JOINT®
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ADAMS HIGH-POLISH FILTRATION MEETS EVERY REQUIREMENT

Adams Diatomite Filters start saving you money from the time of installation! They require only a fraction of the space of sand filters, greatly reducing installation costs.

High-polish filtration produces the highest possible clarity, removes many bacteria and reduces your costs for chemical treatment. Longer filter cycles mean minimum operating labor. And Adams' exclusive High-Dome backwash with sloped base and unrestricted backwash opening provides fast, efficient cleaning with minimum water waste. Get full details today. Find out about Adams' quality features such as heavy-duty 100# pressure shell with 3-coat vinyl plastic lining and Adams rugged, permanent Poro-Stone filter elements. Write for Bulletin 626!

R. P. ADAMS CO., INC.
232 EAST PARK DRIVE • BUFFALO 17, N. Y.

ADAMS *QUALITY COMES THROUGH*

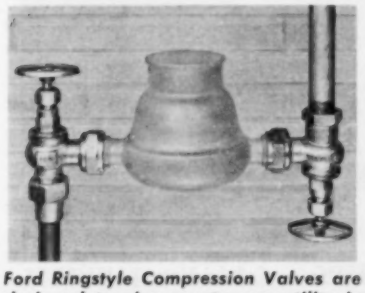
(Continued from page 173)

The back of the bell is internally threaded and screwed on the threaded plain end after the retainer ring is slipped over the barrel of the pipe. An 8-page booklet with details about Usiflex boltless flexible joint pipe is available. For a copy, write PUBLICITY DEPARTMENT, U. S. PIPE AND FOUNDRY CO., 3300 FIRST AVE., N., BIRMINGHAM 2, ALA.

Low-Cost Accounting Machine

Municipal government agencies and public utilities are expected to be major users of this new 10-total Burroughs accounting machine. In addition to updating customer ledger cards, it simultaneously prepares a journal listing. It also validates customer "tickets" in the same printing operation and accumulates control totals on daily activities. A punched paper tape is optional. For details, write Burroughs Corp., Equipment & Systems Division, Detroit 32, Mich.

Easier Meter Settings



Ford Ringstyle Compression Valves are designed to give greater versatility in basement and utility room settings. Angle compression valves can be turned any direction. The Ford Ringstyle construction, which retains the meter coupling nut right on the valve body simplifies the meter setting job, eliminates several pipe joints and saves valuable space. Ringstyle Compression Valves are made in both angle and straight patterns, for connecting to copper or iron pipe by Ford Meter Box Co., Inc., Wabash, Ind.

Toro Makes Known Fleet Financing Plan

Users of institutional power lawn mowing equipment will be interested in the Fleet Financing Plan announced by Toro Mfg. Corp., Minneapolis, Minn. It will help them eliminate initial capital investments and offers a choice of either contract purchase or an equipment lease that may run as long as ten years.

Under the Toro plan, even Toro's largest institutional power mowing equipment is available for as little as $200 per month. Initial equipment purchase needed to participate in the plan is $1,000 or more.

Users who need a variety of equipment—large mowers for open areas, smaller machines for trimming areas, and specialty products for highly congested areas—can now lease the specialized equipment necessary for a complete job of lawn maintenance in one plan. For example, the complete equipment necessary for the maintenance of an 18-hole municipal golf course is available for approximately $400 per month.

Rental rates are computed on 3.5% to 3.0% per month of the base price for the first 40 months; after 40 months, rental rate is $3 per month per unit. The lessee can sell back his unit and call for replacement of a piece of equipment at any time before or after the 40 month lease period, reports the manufacturer.

Toro power lawn mowing units, such as this 7-gang hydraulic unit, are covered by the new fleet financing plan.

Complete details on both the contract purchase and equipment lease plans can be obtained from TORO MANUFACTURING CORP., MINNEAPOLIS, MINN.

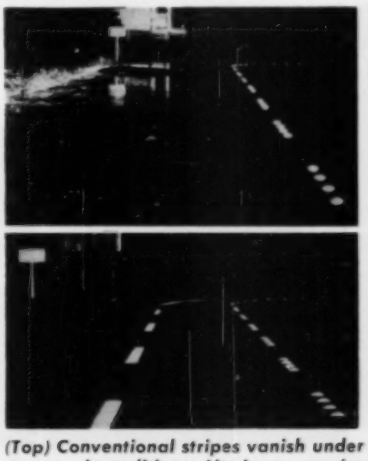
Better Nighttime and Bad-Weather Visibility

A highly effective traffic lane marking system has been developed and is being manufactured by the Adhesive, Resin and Chemical Division of the American-Marietta Co.

It is the Lite-Lane Traffic Guide System, available as a complete package including highly reflective, contoured markers, a high strength epoxy-type adhesive for marker-to-pavement bonding, and an efficient semi-automatic application system, said to insure maximum in-place life and greatest economy.

Tests indicate that a useful life of 7 to 10 years may be expected from the Lite-Lane markers under extreme traffic conditions. The marker is a low-profile durable plastic disc with high impact resistance and flexibility when bonded to the roadway. It contains a uniform dispersion of reflective glass beads throughout which reportedly provides exceptional brilliance when exposed to vehicle lights. The marker is said to remain highly reflective throughout its life. As the grinding action of tires wears it down, new beads continually are exposed to maintain original reflectivity.

The markers can be installed quickly and without halting traffic flow for extended periods. They may be installed on wet or dry pavement or over traffic lines without surface preparation. They also may be applied at temperatures varying from



(Top) Conventional stripes vanish under wet road conditions; Lite-Lane remains clearly visible to safely guide nighttime motorist. (Bottom) Lite-Lane traffic guide markers show same reflectivity as glass-beaded painted stripes in dry weather conditions. Both photos are unretouched-high beam.

(Continued on page 177)

Here's why you get Better Trees and Nursery Stock from COLE NURSERY CO.

IDEAL soil and climate conditions, careful preparation and proper irrigation contribute to the quality of Cole plants. Highly-mechanized systems of planting, cultivating and root pruning produce strong, healthy plants, with more compact root systems, at lower cost. Mechanical digging methods and careful packing assure delivery of Cole nursery stock in good condition with uninjured roots.

Since 1881 Cole Nursery Company has concentrated on developing and producing only the better varieties and highest quality trees, shrubs, evergreens, hedge plants and ground covers. The extensive experience of more than 75 years is applied at our 1200-acre properties at Painesville and Circleville, Ohio. These large-scale operations are among the most modern nurseries in the industry.

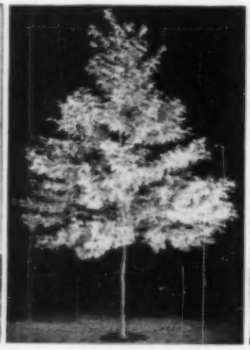
Literally millions of trees and plants, in more than 360 varieties, give you a dependable source of material to meet your needs in large quantity and wide variety. We will be glad to quote on your requirements.

These patented Cole Originals help solve your landscaping and maintenance problems

Although each variety is unique, these trees have all the best qualities of the Honeylocust. They transplant easily, require no staking, are exceptionally strong, hardy and relatively fast growing. Of many thousands grown, only a very few have exhibited small, embryo thorns which drop off or are absorbed by the growing tissue of the tree. They are widely adaptable to almost any soil or climate, readily withstand ice and storm damage, drought and poor drainage. They cause no ground-litter, require no fall clean-up or leaf removal. You'll never buy trees that cost you less for maintenance, damage or replacement.

Spectacular SUNBURST
(Plant Patent No. 1313)
The sensational, new two-color tree with brilliant yellow foliage on branch tips. It appears to burst with bloom all summer long.

Cole's New IMPERIAL
(Plant Patent No. 1605)
The graceful, spreading, new Honeylocust that grows strong and straight *without staking*. A favorite of landscape men and tree experts.



Cole's new SKYLINE
(Plant Patent No. 1619)
Distinctive, stately variety with strong trunk and shapely crown. *Needs no staking*. Dark green foliage has heavy, leathery texture.

Cole's New MAJESTIC
(Plant Patent No. 1534)
A clean, graceful, symmetrically-branched tree. Produces a straight, sturdy trunk and compact crown *without staking or special trimming*.

Cole's New TALLHEDGE
(Plant Patent No. 1388)
A thornless, glossy Columnar Buckthorn that grows to 12 feet. Ideal for tall, narrow, dense hedges or screens. Bears colorful berries.

LARGE QUANTITIES
360 VARIETIES
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THE COLE NURSERY CO.
PAINESVILLE, OHIO

OHIO'S LARGEST
WHOLESALE NURSERY
ESTABLISHED 1881

(Continued from page 175)

38° F to 90° F, and over abraded surfaces, with or without preheating.

Citing lane and median lines, road edge markings, cross walks, stop bars and alignment delineation areas as possible uses for the new system, Donald V. Redfern, American-Marietta vice president, underscored Lite-Lane's traffic channeling abilities.

A written performance guarantee covering application performed by American-Marietta or licensed contractors is offered. For self-installers, complete training services covering equipment and installation are available.

Specifications and detailed information can be obtained from AMERICAN-MARIETTA COMPANY, 3400 13TH AVE. S.W., SEATTLE 4, WASH.

Steel Strip Makes Neat Edging

Firmly but unobtrusively steel curbing separates lawn from drive, preventing the one from encroaching upon the other.

Steel curbing as a neat yet positive edging for park lawns, flower beds, garden plots, driveways, and public parking areas is becoming increasingly popular, according to one leading manufacturer of the product, JOSEPH T. RYERSON & SON, Box 6208, CLEVELAND 1, OHIO.

Landscape architects, contractors, homeowners, managers of parks, as well as shopping centers, service stations, and playgrounds, find steel curbing an economical way to preserve and enhance the natural beauty of landscaped property.

It may be taken up and relocated simply and easily, which makes it attractive for temporary use in establishing driveway and parking boundaries at stadiums, athletic fields, picnic grounds, etc.

For heavy-duty service the curbing comes in ¼-inch thick steel, 5 inches high, in 16-foot lengths. Stakes are supplied for firmly anchoring the steel strip to the ground.

An illustrated bulletin, available from the company, gives full information on this all-steel curbing and landscape border.

Alcoa Puts Out the Municipal Welcome Mat

A major new highway sign promotion, called "Mystery Town, U. S. A.," offers qualified participants a free sign welcoming travelers to the municipality.

The sign is made of high strength, light-weight Alcoa aluminum with two printed colors on imperial white "Scotchlite" brand reflective sheeting. Emblazoned on the marker will be the words: "Welcome to (the name of the town or county)."

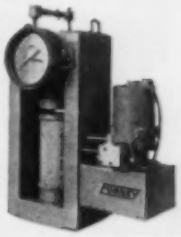
For a community to be eligible, it must purchase a minimum of

(Continued on page 178)

FORNEY
CONCRETE TESTERS

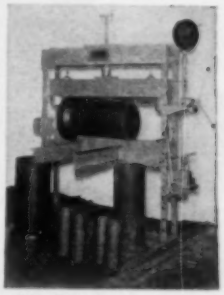
meet the exacting requirements of the construction industry's concrete testing applications.

Forney engineers are proven specialists in the concrete testing equipment field. For eleven years they have furnished the industry with quality testing equipment, accessories and supplies.



MODEL FT-30 HEAVY-DUTY PORTABLE CONCRETE TESTER

Latest addition to a complete line of portables, the FT-30 brings laboratory performance right to the job site. Self-contained power unit eliminates cumbersome hose and manual pumps. Loading speed is completely variable for accurate conformance to current ASTM standards.



MODEL PT-15 TILE TESTING MACHINE

Has 14,000-lb. capacity and is designed for testing clay and concrete drain and sewer tile up to 24" I. D. and 48" lengths. Equipped with two pumps for fast loading and slow application of critical load. Conforms to current ASTM standards.

ALL FORNEY EQUIPMENT UNCONDITIONALLY GUARANTEED

KNOWN THE WORLD OVER

FORNEY'S, INC.
Tester Division
P. O. Box 310
New Castle, Pa., U. S. A.
Phone OLiver 2-6611
Cable : Forney's, New Castle

(Continued from page 177)

$500 worth of aluminum banks, or $1,000 worth of finished signs. The city or county may receive additional free welcome signs for each minimum order, up to a maximum of five welcome markers at no cost.

For additional information on "Mystery Town, U. S. A." sign promotion and Alcoa aluminum signs and sign material, write ALUMINUM COMPANY OF AMERICA, 766 ALCOA BLDG., PITTSBURGH 19, PA.

Model 3VSI is a new submersible dewatering pump with only one moving pump part and just three wearing surfaces.

Submersible Dewatering Pump

Gorman-Rupp's new submersible dewatering pump, useful to municipal maintenance crews and contractors, is now in full production.

Model 3VSI is a 3-inch centrifugal powered by a 5-hp, 3450-rpm, 60-cycle electric motor, and is available in three voltage selections: single phase, 230 volt; three phase, 220 volt; or three phase, 440 volt. Remote control box with overload protection and 75 feet of heavy-duty electrical cable are standard equipment with each pump. Complete unit weighs 128 pounds; the pump alone, 95 pounds.

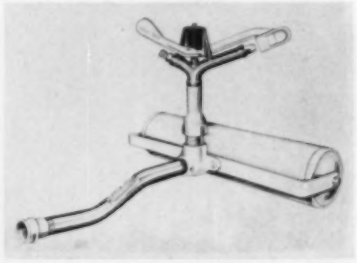
Cacapity range, 10 gpm at 120 feet of head to 300 gpm at 10 feet of head, is comparable to other makes using larger motors, the manufacturer reports. Motor and seal are in separate, oil-filled areas of pump housing. Pump may run in complete safety, unattended even if the hole runs dry.

Open strainer area of 88 square inches has been provided. Spherical solids of $\frac{3}{8}$-inch diameter will pass through the pump and the suction arrangement permits pumping down to one inch of a pit bottom.

For additional information, write THE GORMAN-RUPP COMPANY, 305 BOWMAN ST., MANSFIELD, OHIO.

Turf Sprinklers

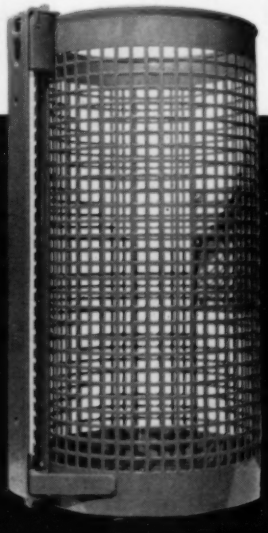
A variety of models is available in the new Turf Bird series of sprinklers, which have been especially designed for the turf. Most, such as the new R-707S greens sprinkler,



Turf Bird sprinklers feature a wide range of capacities and some models can be adapted for full or part circle coverage.

THIS

or THIS



in the continuing battle against STREET LITTER

Priced low enough to enable frequent installation and attractive enough to invite public and official acceptance. The Howard Basket is open to the fresh air to eliminate putrefaction of litter. Pole mounting prevents damage from kicking and falling and also conserves valuable sidewalk space.

SPECIFICATIONS
Material: 16 gauge perforated steel.
Coating: tough, durable, epoxy.
Height: 24 inches.
Weight: 16 lbs. (Shipped in individual corrugated containers)
Diameter: 12 inches.
Cubic Content: 2,400 cubic inches.

HOWARD METALCRAFT
WOodring 5-9071
EMMAUS, PA.

employ a new low 21° trajectory. This low angle trajectory reportedly provides superior pattern of water coverage under windy conditions.

Use of aluminum alloy for some components makes Turf Bird sprinklers lighter in weight; all units are adapted for use on underground systems. Full information and specifications on this new line of sprinklers can be obtained from RAINY SPRINKLER SALES, 609 WEST LAKE, PEORIA, ILL. (in the East and Midwest) or from NATIONAL RAIN BIRD SALES & ENGINEERING CORP., P. O. BOX 547, AZUSA, CALIF. (in the West).

14-Story Water Tank

This 147-foot pedestal spheroid elevated water tank is in service near Geddes, N. Y. Its rated capacity is 500,000 gallons and it was designed to tie in with a 100,000-gallon elevated tank in the same area to assure pressure equalization. The expanded water system permits the district to welcome additional new industries. Design, fabrication and erection were done by the Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh 25, Pa.

Expands Services to Midwest and East

PIPE LININGS INC., 20-year old subsidiary of American Pipe and Construction Co. of Los Angeles, and largest organization in the West specializing in rehabilitation of water pipelines "in place," announce expansion of services in the Midwest, East and eastern Canada, with new headquarters at 50 CHURCH ST., NEW YORK 7, N. Y. Eastern operations will function in cooperation with the

(Continued on page 181)

Typical Pipe Linings Inc. field unit installing cement mortar lining in underground water pipe line without interruption to street traffic. Next access hole is 300 feet away.

POWERFUL, NEW
M&M BRUSH CHIPPER
handles limbs up to 8" diameter

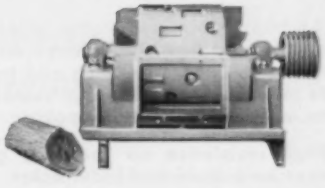
107

AMERICA'S
NO. 1 BRUSH CHIPPER

M & M's exclusive design of small, staggered and tapered cutting knives in the large cylinder allows chips to be *shaved off . . . not cut off;* makes it possible for this new chipper to handle 8 inch logs without creating impact shock responsible for damaging bearing and clutch wear.

Unique twin-bar design allows the chipper to produce either large or small chips . . . a profit-making feature, since small chips have many uses.

The heavy-duty M & M chipper has a built-in blower to regulate direction and distance of chips. Large, heavy rotating cylinder in between heavy-duty roller bearings eliminates overhanging flywheel. All-welded, special alloy steel construction



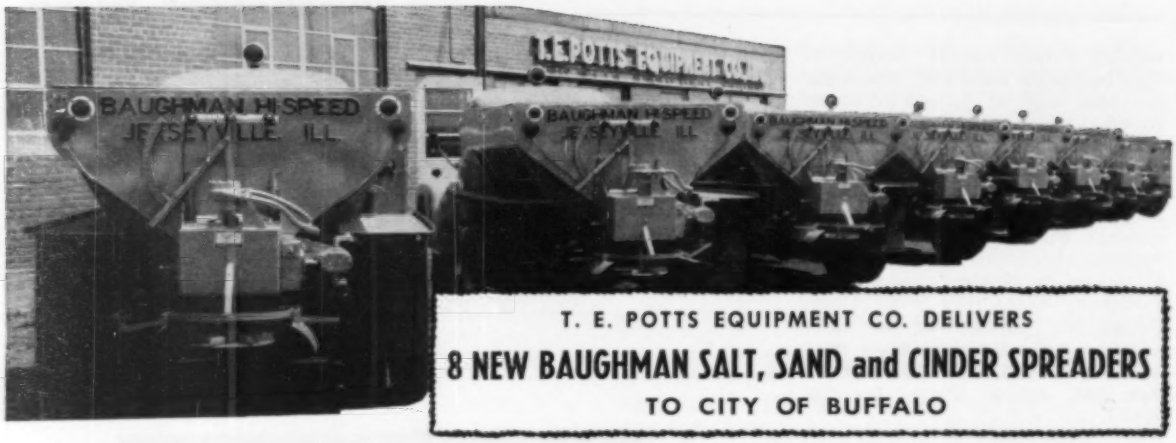
of simple design assures trouble-free operation and low maintenance costs.

With the addition of this heavy-duty model, Mitts & Merrill manufactures a complete line of chippers in sizes and capacities for any brush disposal requirement. Write today for complete information.

LARGE AND SMALL M&M HANDLES THEM ALL!

MITTS & MERRILL • 1003 So. Water Street • SAGINAW, MICHIGAN

BUILDERS OF WORK-SAVING, MONEY-SAVING AND MATERIAL RECLAIMING MACHINERY SINCE 1854



T. E. POTTS EQUIPMENT CO. DELIVERS

8 NEW BAUGHMAN SALT, SAND and CINDER SPREADERS

TO CITY OF BUFFALO

Before you specify, consider how operating efficiency will be increased and long-life low cost performance assured, with these important Baughman ice control features:

LUBE-IMPREGNATED CHAIN DISCHARGE . . . a Baughman exclusive, positively insures greater corrosion resistance and virtually eliminates chain freezing.

TOUGHEST CHAIN DISCHARGE of any ice control body . . . total test strength of 40,000 lbs.

STRONGEST BODY MADE . . . with reinforced top edge, extended side jacks and internal bracing for full body support.

FEWER WORKING PARTS . . . less maintenance, yet positive spreading with even, quick, safe discharge.

WRITE TODAY for illustrated Bulletin A-408-B.

Better Service Through Better Engineering.
Service and Parts from 200 Service Branches.

BAUGHMAN

BAUGHMAN MANUFACTURING CO.

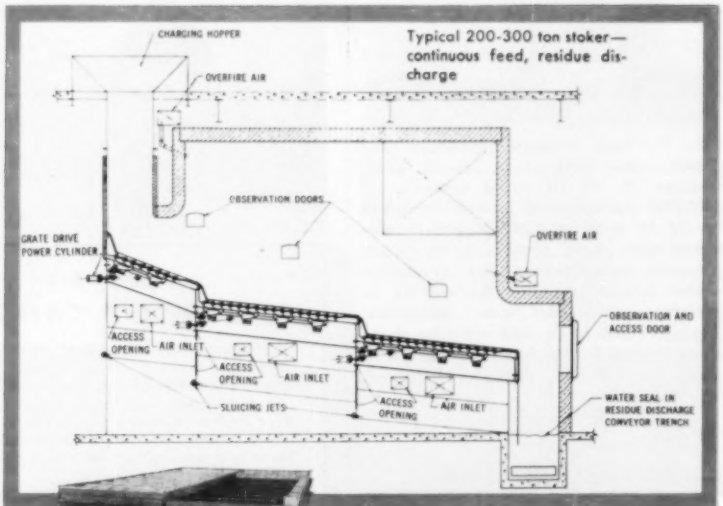
307 SHIPMAN ROAD JERSEYVILLE, ILL.

DETROIT
RECIPROCATING GRATE
INCINERATOR STOKER

FOR MUNICIPAL AND INDUSTRIAL INCINERATORS

- Alternate lateral rows of reciprocating grates convey the refuse mass through the firing chamber, tumbling and tearing it, to expose its maximum surface to flame, and without manual poking.
- High resistance air metering grates prevent bare spots and blow holes.
- Hydraulic drive, automatically controlled for selected frequency and length of grate-reciprocating strokes.
- Factory-assembled for shipment in modular units (single or multiple) for any size incinerator, assure a minimum of field erection labor.
- Full details and specifications in Bulletin 701. ASK for IT.

Also Available—
Detroit Rocker Grate Incinerator Stoker



Typical 200-300 ton stoker—continuous feed, residue discharge

Two-unit stoker with drives and controls, being shop-assembled

DETROIT *SINCE 1898* **STOKERS**

DETROIT STOKER COMPANY

DIVISION OF UNITED INDUSTRIAL CORPORATION

MAIN OFFICE AND WORKS • MONROE, MICHIGAN

District Offices or Representatives in Principal Cities

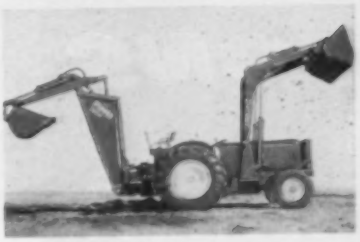
(Continued from page 179)

National Water Main Cleaning Co., at the same address.

Pipe Linings Inc. uses the Spunline and Tate processes, cement mortar lining of pipe being justified on the basis that it gives virtually new pipeline performance at far less cost than that of pipeline replacement. Specific installations, the company reports, have shown increases in flow characteristics as high as 142%.

Offers New Backhoe Line

A newly-designed line of backhoes for use with light or medium tractors and medium or heavy tractors has been introduced by the WINDSOR PIPPIN CORPORATION, WINDSOR, VT.



The re-designed Pippin Backhoe line now features a chrome-nickel molybdenum boom bracket for added strength; improved hydraulic cylinders for increased digging power; and S.A.E. 4130 hardened bosses

Adds New Model to Distributor Line

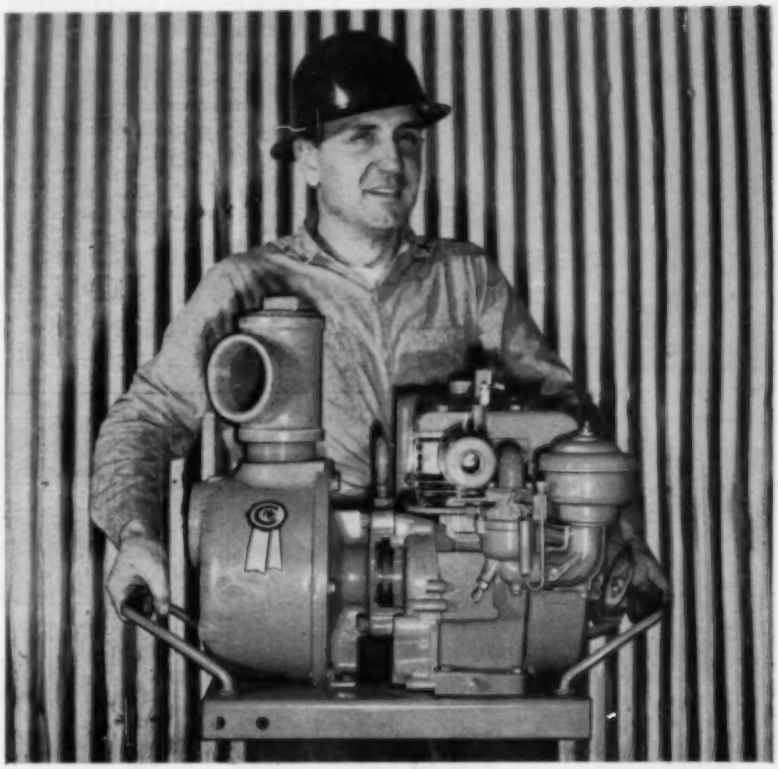
A special feature of the FX-500 Black Topper distributor recently introduced by E. D. Etnyre & Co. is the new 400gpm heat-jacketed pump which is heated by engine exhaust directed into the jacketed pump case surrounding the pump impellers. Hot air is then directed to the intake valve above the pump after passing through ducts in the pump case. With suction on top and discharge at bottom, pump is self-draining and there are no low points to trap material which flows straight through.

Tank insulation is 2 inches of fiberglas with asbestos molded blocks for spacers to maintain the full 2 inches of insulation without compression.

Standard equipment on the FX-500 is Etnyre's full circulating spray bar. This bar combines the advantages of full material circulation with a 92° rotation up from spraying position for complete valve drainage and elimination of every possible chance to drip. Pressure circulation delivers material the instant valves are open for instant, clean starts. End sections fold on leakproof ball bearing hinges.

For additional information on the FX-500, write E. D. ETNYRE & COMPANY, OREGON, ILL.

Weightsaving aluminum is used wherever possible on the FX-500 to provide largest possible load capacity.



Picture of a man* carrying 19,000 gallons of water per hour...

*He's not a giant, either. Doesn't have to be. Cause the CMC 3" WONDER-*Lite centrifugal pump* he's carrying weighs only *97 pounds* . . . but will pump in excess of a whopping *19,000 gallons per hour.* Cast iron impeller and volute make it a rugged performer with long, long life. All-aluminum pump body and all-aluminum 4-cycle engine make it easiest of all to handle, carry about.

CMC WONDER-Lites are perfect for all kinds of dewatering jobs. *Available in 1½", 2" and 3" sizes. Write for* BULLETIN WLP-160 for details.

CONSTRUCTION MACHINERY COMPANY, Waterloo, Iowa

CMC WONDER-*Lite* LIGHTWEIGHT PUMPS

500 TONS OF CASTINGS DAILY!

With the recent opening of plant #2, shown above, our production potential of Gray and Ductile Iron Construction and Industrial Castings has now reached a maximum of 500 tons daily. This capacity, plus 15,000 patterns, plus a good on-hand supply of standard castings, plus 90 years experience in the business, is your assurance of prompt delivery, superior quality, complete uniformity and practical economy.

* * *

New and fully illustrated 168-page catalog of construction castings will be sent promptly upon request.

NEENAH FOUNDRY COMPANY

NEENAH • WISCONSIN

Chicago Office: 5445 North Neva Avenue, Chicago 31, Illinois

BUILDING LETTERS

HISTORICAL MARKERS

MUNICIPAL MARKERS

GOLF COURSE PLAYGROUND MARKERS

CEMETERY MARKERS

Municipality

STREET SIGNS

Signs are complete . . . . no fittings to buy

24 hour visibility

Four way—2 double face—with pipe cap. New scientific coatings make them permanently attractive, and withstand weather, airborne acids, alkalies, and other contaminating materials. Choice of satin or Prismo reflectorized letters against colored background. Easy to read both day and night. Write for brouchure "AC".

LAKE SHORE MARKERS INC

CAST *Lifetime* ALUMINUM

654 W. 19th St. • Box 59 • Erie, Pa.

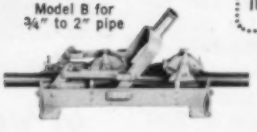
Only the

Trojan Pipe Puller & Pusher

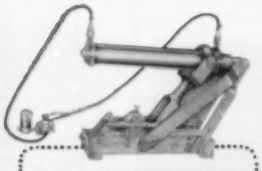
gives you continuous action . . .

No Resetting of Grip!

MODEL A for ¾" to 1" pipe



Model B for ¾" to 2" pipe



NEW AIR POWERED Model B

Does all the work for you. Handles ¾" to 2" pipe.

Write today for full details!

CUTS COSTS! SAVES TIME- in installing or renewing pipe under pavement

The Trojan combines pushing and pulling operations in one machine—eliminates all time-killing resetting of grip—keeps pipe continuously moving. Does the job at lower cost—in far less time.

Model A weighs 65 lbs.—requires only 5' trench. One man can easily install the average service. 15 tons of pushing pressure possible. Also available for ½" pipe.

Model B (either manual, hydraulic or air powered) needs only a 6' trench—has 3 speeds for different soils—is reversible in 30 seconds. Push pipe comes in 30" lengths, assures straight travel.

The TROJAN Manufacturing Co.

1113 Race Drive • Troy, Ohio

(Continued from page 181)

where boom bracket attaches to the main frame. In actual tests, Pippin Backhoes have dug through 34 inches of frost for over 500 hours showing no signs of wear or fatigue. Pippin Backhoes are adaptable to any make or model tractor, American or foreign.

In addition to marketing the 260-H and 360-H, the Windsor Pippin Corp. also manufactures a complete line of heavy-duty loaders for independent mounting or to match Pippin Backhoes in combination mounting. For complete information write the company.

Quickly Removes Concrete and Asphalt

Latest addition to the expanding line of construction equipment manufactured by Equipment Development Company, Inc., Silver Spring, Md., is the Edco Concrete Plane, which removes excess concrete and asphalt from slabs, roadways, parking lots, bridge surfaces, airport runways, etc.

It has a series of high carbon steel cutters, which rotate at high speed and are completely adjustable. They will remove a traffic line or "cut" the surface of a slab ½ inch deep and 5 inches wide quickly, reports the Equipment Development Co.

A quick disengage lever gives the operator complete control of the planer. Worn cutter assemblies, it is reported, can be changed in less than three minutes. Large rubber tired wheels enable the operator to move the unit easily over the work area. Additional information can be obtained from EQUIPMENT DEVELOPMENT COMPANY, INC., 2700 GARFIELD AVE., SILVER SPRING, MD.

Removal of high spots, high joints, excess joint sealer compounds on highways and airport runways, the erasing of traffic lines on streets and parking lots, and the scarifying and cleaning of slabs prior to re-topping is made easier by the Edco concrete plane.

Low-Cost Backfilling

A highly maneuverable, 4-wheel drive unit, designed specifically for fast, low-cost backfilling, has been introduced by the VERMEER MFG. CO., PELLA, IOWA. It is called the Pow-R-Ditch Filler and has been tested under all types of soil conditions.

A rear-mounted 36-hp Wisconsin engine powers the Ditch Filler. Hydraulic power provides forward

(Continued on page 185)

OMAHA *chose* STEEL PIPE *for* FEEDER MAIN

. . . every length was hydrostatically tested in the shop to AWWA standards!

Maximum length and minimum wall thickness, as only steel pipe provides, enabled the Metropolitan Utilities District of Omaha to install a big pipe line through a quiet residential district with little inconvenience. Only 180 ft. of narrow trench was open at one time to install the coal tar enamel coated 48 in. diameter, ⅜ in. wall thickness steel pipe in. 40 ft. lengths.

Workers of the Metropolitan Utilities District, under the direction of General Superintendent Kenneth Young, are shown lowering a section of pipe into place in the trench just a few feet behind the digger.

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

. . . these are inherent qualities of fabricated *steel* pipe. Compare *steel* pipe with other types . . . you'll see why "wherever water flows, steel pipes it best." You can always specify *steel* pipe with confidence.

For your copy of the latest steel pipe brochure, write—

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

STEEL PLATE FABRICATORS ASSOCIATION

ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

USED AS SNOW PLOW IN WINTER

Many cities use their Etnyre Street Flushers all year 'round—in winter plowing snow; in summer cleaning streets. Knife-edged, high pressure streams of water clean streets up to 42 feet wide — thoroughly — even under parked cars. Special attachment in front of radiator grille adapts Flusher to winter snow removal. You can save time and money with an Etnyre — see your nearby Etnyre dealer or write us today.

E. D. ETNYRE & CO., Oregon, Illinois

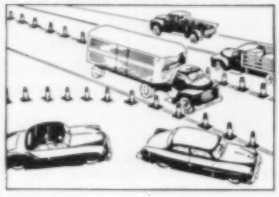
HERE is the answer to EMERGENCY BARRICADES

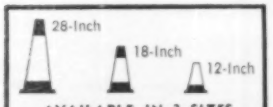
Lightweight, Easily-Adaptable

SAFE-T-CONE
TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.





AVAILABLE IN 3 SIZES

Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

*Poly-Vinyl Chloride

For full information write
RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

No other filtering medium compares with

ANTHRAFILT
Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is best for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT
offers important advantages over sand and quartz

DOUBLES length of Filter runs • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P. O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

THIS PICTURE SHOWS WHAT WEED OUT TREATED AREA LOOKS LIKE AFTER 2 YEARS

Note the abrupt Weed line at the gate

Ask for our 1961 52 page Brochure

ON WEED OUT

Manufactured Exculsively by

FencPainteR Division

4911 South Racine Avenue-Chicago 9, Illinois

(Continued from page 183)

travel speed during backfilling. When in transport the unit uses mechanical drive. Power steering is standard.

Front-mounted 24-inch power-driven auger, 7½ feet long, deposits dirt back into the ditch in one pass and in a fraction of the time usually required for the job. Adjacent area is left clear of all debris.

Operator's platform is located above the auger, allowing clear unobstructed visibility both ahead and behind the unit.

The Pow-R-Ditch Filler reduces backfill and clean-up time and helps cut backfill equipment costs.

New Tilt-Cab Diesel Tractors

Ford, a sales leader in gasoline-powered tilt cab trucks, announced it has entered the diesel field with a new line of tilt-cab diesel-powered tractors.

"The new 'H' series diesels are another step in Ford's program to meet every commercial trucking need with vehicles capable of offering the utmost in durability and economy," said Don F. Ball, heavy truck sales manager for Ford Division of Ford Motor Co., P. O. Box 608, Dearborn, Mich. "They are tailored to fit the requirements of a majority of the operators of heavy, over-the-road diesel trucks in this country."

Ford's diesel tractors are powered by a selection of five popular Cummins diesel engines ranging from 180 to 220 horsepower. In addition, the "H" series is also available with Ford's own proven Super Duty gasoline V-8 engines ranging from 206 to 266 horsepower.

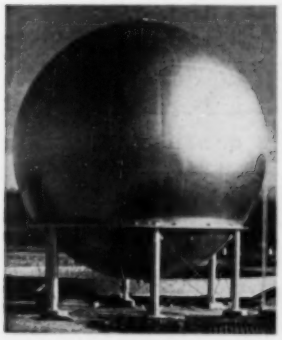
The Trenchit digs from 4 inches to 12 inches in width with variable, selective depths.

Vertical Boom Trencher

A new, heavy-duty utility trencher with a vertical boom has been developed by Century Engineering Co. It is known as the Trenchit.

According to the manufacturer, the vertical boom requires less horsepower because it eliminates the reverse force found in conventionally angled digging booms. The boom enters the ground at a vertical angle

(Continued on page 186)



GAS HOLDERS

for recovery of sewage gasses

Many municipalities are salvaging sewer gas for fuel, through the use of Cole gas holders similar to the one pictured. Send us your inquiries for tanks of this type—as well as for elevated water storage tanks . . . Take advantage of our 106 years of specialized knowledge and experience in serving America's municipalities and industries and discuss your problems with us. Visitors are always welcome at our plant. Stop by and see us.

Elevated Tanks, Pressure Vessels, Chemical and Processing Equipment from Aluminum, Stainless and Carbon Steel, Monel and Other Alloys.

Established 1854

R. D. COLE MANUFACTURING CO. COLE NEWNAN, GEORGIA

2-WAY RADIO

from $134.95

Anyone can operate—license issued by FCC on request!

Ideal for small municipalities . . . puts 2-way radio within the reach of any budget! Complete Citizens' Radio (Class "D") transceiver—excellent range—highly sensitive and selective receiver. Built-in squelch, Automatic Volume Control, and Automatic Noise Limiter. 23 channel coverage—select 1 of any 5 channels with the flip of a switch. Easy to install anywhere. Complete with tubes, push-to-talk microphone and crystals for one channel.

SEND FOR FREE COLOR BROCHURE!

Please send full details on the "Messenger"

NAME_____

ADDRESS_____

CITY_____ STATE_____

VIKING *Messenger*

E. F. JOHNSON COMPANY

2101 Tenth Ave. S. W. • Waseca, Minn.

Manufacturers of the world's most widely used personal communications transmitters

(Continued from page 185)

enabling the operator to work flush to walls, curbs and sidewalks. Less cross-sectional area of the boom in the ground facilitates steering.

The Trenchit quickly hitches to a car or pick-up vehicle by means of hydraulic controls and can be towed safely from job to job at highway speeds. For shorter distances at the job site, the self-propelled unit has a walking speed of up to 2½ mph. All operating functions of the Trenchit are hydraulically controlled. For more information, write CENTURY ENGINEERING CO., WAUKESHA, WIS.

Announces New Sludge Pump Control

Komline-Sanderson's new sludge pump control utilizes harmless nuclear energy. It is called a Sludge Reader and reacts to changes in solids concentrations passing through a line and, at predetermined consistency, starts or stops the pump.

The Reader uses a low energy source which passes through the flow pipe and the pipe's contents to a detector mounted diametrically opposite the energy source. Variations in the sludge density in the pipe will cause variations in the nuclear beam as received by the detector. These variations are passed on to a

Turbine-Type Snow Loader

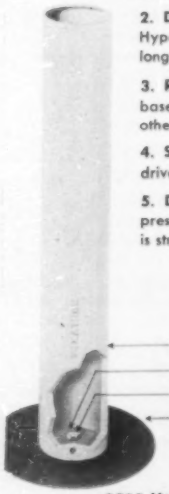
Sno-Thro, a new product of Wausau Iron Works, Wausau, Wis., handles all types of snow—heavy, wet, light, compact. It loads up to 18 cubic yards of snow per minute and features an all-electric hood that's cab-controlled. The hood enables the operator to load trucks to full capacity without spillage. Sno-Thro will cast snow up to 60 feet in any direction within a 360° arc and with a concentrated pattern. This rugged, turbine-type loader can be quickly installed or removed. Its low silhouette does not obscure operator visibility. It is shown at the right at work in Racine, Wis.

The ONLY Lane Delineator engineered from top to bottom for long-lasting life in any climate . . . at a reasonable price

ONLY Fixatron* Trade-Mark TRAFFIC MARKERS GIVE YOU...

1. **FLEXIBILITY**—In all temperature ranges, quick "snap-back" action is assured because of tapered design.
2. **DURABILITY**—Highest quality, synthetic RUBBER (Du Pont Hypalon) and painstaking engineering make this the longest-lasting traffic marker ever produced.
3. **REMOVABLE IN SECONDS**—by one bolt, or nut. Flat base plates can be left in street and markers moved to other areas. Excellent for changing traffic patterns.
4. **SAFETY**—Fixatron's flat base plate cannot divert driver's steering control if accidentally driven over.
5. **DESIGN**—Bolt-retained, spring washer creates ring-like pressure around base preventing displacement if Fixatron is struck.

Model FM-2 Fixatrons are packed 50 to carton. Smaller quantities upon request. Price $4.95 each, F.O.B. Glenside, Pa.



*Patents Applied For

NATIONWIDE TRAFFIC ENGINEERING CO., INC. Makers of Fixatron TRAFFIC MARKERS

2535 Mt. Carmel Avenue, Glenside, Pennsylvania

TAX EQUALIZATION APPRAISALS

Offering a background of a quarter century of

unduplicated experience producing high quality

appraisals for local Tax Equalization Purposes

THE STANDARD OF EQUALITY IN TAX EQUALIZATION

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COLE • LAYER • TRUMBLE COMPANY
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BRANCH OFFICES
405 Allegheny Avenue, Hollidaysburg, Pennsylvania
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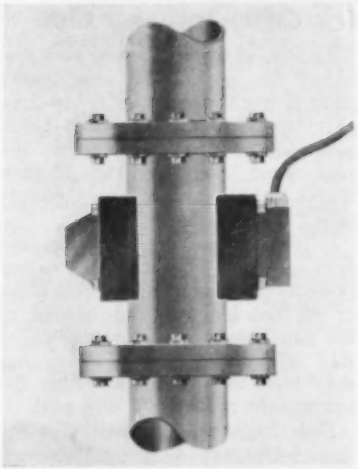
415 Congress Street, Portland, Maine
84 Peachtree Street, N.W., Atlanta, Georgia



Komline-Sanderson's new sludge reader eliminates problems associated with maintaining proper sludge or slurry flow consistencies passing through pipe lines.

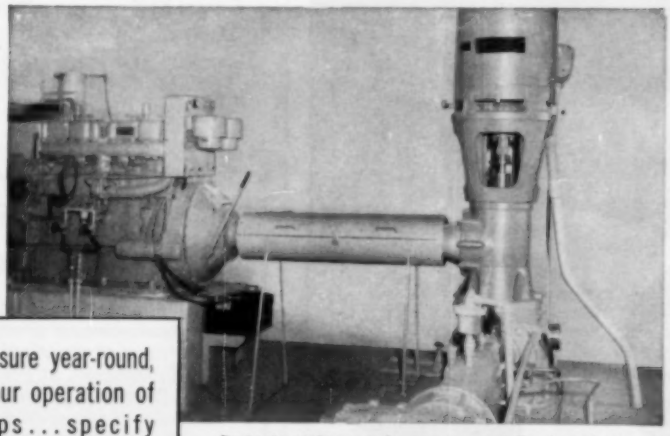
computing circuit that energizes the pump controls, stopping the pump when the flow gets below the desired consistency, then clearing the line and starting the pump again when flow consistency regains the desired level. For additional information, write KOMLINE-SANDERSON ENGINEERING CORP., PEAPACK, N. J.

Economical-Size Safety Spreader

This 1-ton pull-type spreader for ice and snow control can be used in confined areas where large spreaders would be impractical. It is particu-

(Continued on page 188)

The standard Safety Spreader can be pulled by a tractor or any unit equipped with a power takeoff attachment for operating the distributor spinner. Another version allows it to be pulled by any type vehicle.



To insure year-round, 24-hour operation of pumps...specify

JOHNSON

Right angle

GEAR DRIVES

Protects water supply, sewage and flood control operations against power failures; also permits overhauling electric motor or power unit without interrupting service. Thousands in use by municipalities, industry and farmers. Available in turbine or engine driven combination drive (as shown here), standard and dual types, with either hollow or solid shaft. Sizes: 15 to 450 hp. Write now for engineering catalogs.

JOHNSON MAKERS OF FINE GEARS SINCE 1904

GEAR & MANUFACTURING CO., LTD.

8TH AND PARKER STREETS • BERKELEY 10, CALIFORNIA

East and Gulf Coast representatives:

Smith Meeker Engineering Co., 157 Chambers St., New York City

4

Plant Trenches NEED CLEAN, DRY COVERS

TRENCHES in floors of industrial plants often house subsurface pipes, valves, etc. Often these trenches are covered with cast iron plates or wooden boards which collect grease, oil or water, making unsafe floor areas.

Trench covers of 75% open Irving metal grating remain safe because they will not collect these substances. In addition to providing drainage and traction, grating sections can be easily removed for access to trenches.

★

Manufacturers of Riveted, Pressure-Locked and Welded Gratings in Steel, Aluminum and other metals for over 50 years.

"A Fitting Grating for Every Purpose"

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IRVING SUBWAY GRATING CO., Inc.

Originators of The Grating Industry Est. 1902

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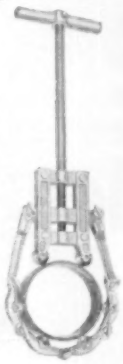


Ellis Heavy Duty Pipe Cutters For Pipe Up To 16" Dia.

With Long Lasting Cutter Wheels

Designed for water works men who appreciate the rugged construction of drop-forged frame and links; and a tool that assures no pipe breakage, no re-cutting and no spoilage.

THREE SIZES

No. 01 for 4" to 8" Pipe
No. 1 for 4" to 12" Pipe
No. 1B for 4" to 16" Pipe

write today for free literature

ELLIS & FORD MFG. CO.
1100 COOLIDGE RD.
BIRMINGHAM, MICH.

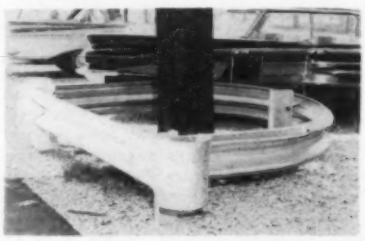
Purchasing News

(Continued from page 187)

larly suited for use on sidewalks, ramps, runways, parking lots, driveways, and playgrounds, yet capably handles conventional spreading on streets and highways.

The Safety Spreader applies salt, sand, cinders and other types of commonly used ice and snow removal materials. A belt conveyor powered by a steel-mounted sprocket empties the body. Spreading pattern can be accurately controlled at any width from 3 to 32 feet.

For additional information, request Bulletin A-453; write BAUGHMAN MANUFACTURING CO., INC., JERSEYVILLE, ILL.



Armco's new, light-gage, low-impact guardrail effectively used in a parking area application.

Light-Gage Guardrail for Off-Highway Use

Known as Econo-Beam, and designed for parking-lot use, inside plant protection and similar low-impact applications, this deep-beam guardrail is made of low-cost 16-gage steel, compared to 12-gage beams of standard highway guardrails.

It is galvanized on both sides and does not need painting for weather protection. It is supplied in 12½- or 25-foot lengths, and instead of the usual eight splice-bolts of highway guardrails, Econo-Beam has only four. A single bolt holds the lightweight sections to any post.

For further information, write ARMCO DRAINAGE & METAL PRODUCTS, INC., 9360 CURTIS ST., MIDDLETON, OHIO.

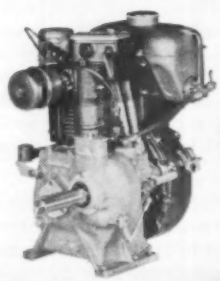
Purchasing News Briefs

● **Philadelphia Suburban Water Co.,** Bryn Mawr, Pa., has acquired an interest in Ster-O-Matic, Inc., Chicago-based company engaged in research, development and market-

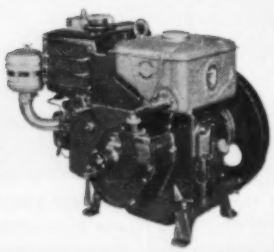
BIG JOB...SMALL ENGINE?

YANMAR

DIESEL DOES IT!



SAFE
COMPACT
DEPENDABLE
VERSATILE



4-Cycle — AIR-COOLED — Single Cyl. 2 to 4½ BHP — 2000/3000 RPM. LIGHT WEIGHT — EASY STARTING. Especially recommended for PORTABLE & EMERGENCY EQUIPMENT.

A Precision Product of the New Japan. Made to U.S. specifications by the world's largest manufacturer of small diesels. COMPLETE ACCESSORY LINE. All engines and parts stocked in the U.S.A.

4-Cycle — WATER-COOLED — Single Cyl. 2 to 8 BHP in 2000 RPM range. COMPLETELY SELF CONTAINED. Easy starting — smooth running for GENERAL PURPOSE APPLICATIONS.

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Mailing Address: P. O. Box 5309, Long Beach 5, California

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- garage and parking lot adjacent
- close to the Stadium & Public Auditorium from $6.50

BR 1-0260
James J. Stack, Gen. Mgr.

stay at the
PLANKINTON HOUSE

ing of new techniques and products for water treatment. Joining it in this investment are Indianapolis Water Co. and Ether-Langham Thompson, Ltd. of London, England. Together they will own virtually all common stock of Ster-O-Matic, Inc.

● new office and warehouse facilities just opened in Birmingham, Ala., by **Zep Manufacturing Corp.**, Atlanta, Ga., manufacturer of sanitation and maintenance products, are designed to improve the firm's service to the Southeast. The plant, located at 3605 Third Ave. S., will be managed by Robert Zaban.

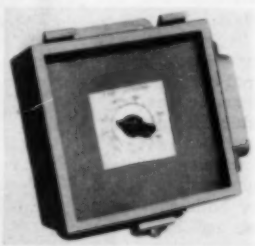
● acquisition of the repair stock and manufacturing rights to the Detroit Harvester Sweeper from the Dura Corporation of Zanesville, Ohio is reported by **M-B Corp.**, New Holstein, Wis. Repair parts as well as complete machines will be manufactured and shipped from M-B's New Holstein facilities.

● **Highway Trailer Industries, Inc.** and **Clinton Engines Corporation** have put a world-wide embargo on Cuban sales and have notified distributors and customers that their franchises would be revoked immediately if they were party to transshipment of Highway and Clinton products to Cuba. The embargo was imposed by David B. Charnay, chairman of the board of both companies.

● latest in a spreading nationwide network of offices concerned with the sale of RCA's 301, 501 and 601 electronic data processing systems is the recently opened sales office of the **RCA Electronic Date Processing Division** in the State Tower Bldg. in Syracuse, N. Y. to service upstate New York area.

● establishment of three new selling districts and a re-alignment of almost all paving materials selling areas east of the Mississippi River has been announced by **Barrett Division, Allied Chemical,** New York 6, N. Y., a leading manufacturer of road building materials. The new sales districts are Cincinnati, Ohio; Detroit, Mich., and Binghamton, N. Y.

● manufacturing plant of the new **Caterpillar Tractor Co.** subsidiary, Caterpillar France S. A., is located in Grenoble, France. W. J. Bornholdt president of the subsidiary, reports production of Caterpillar D4 tractors is scheduled to begin in March. Later, the plant will also manufacture 955 Traxcavators.



A Correction

The Komline-Sanderson liquid level control for sewage ejectors, described in the January issue of The American City, page 167, was incorrectly illustrated. This is what it really looks like.

control

for algae and aquatic weeds

In small amounts, Triangle Brand Copper Sulfate controls algae growth and kills some of the more troublesome aquatic weeds. They disintegrate where they are, which prevents downstream infestation or clogged waterways.

In sewage pipes, Triangle Brand Copper Sulfate can be used in such low concentrations to control root and fungus growth that surface trees remain unaffected.

Two informational booklets, "The Use of Copper Sulfate in the Control of Microscopic Organisms," and "Copper Sulfate for Root and Fungus Control in Sanitary Sewers and Storm Drains," available on request.

Phelps Dodge Refining Corp.
300 PARK AVENUE, NEW YORK 22, N.Y.

ABOUT PEOPLE

E. J. (Erv) Goes, a veteran of 47 years with **Koehring Co.,** Milwaukee 1, Wis., has retired from the company. In his long tenure with Koehring, he held various sales, advertising and publicity posts. As advertising and publicity manager (1932-1959), he directed advertising and sales promotion activities of all Koehring divisions and subsidiaries. Since 1959 he has been publicity manager. Mr. Goes' duties with Koehring will be taken over by the company's advertising manager, Martin B. Jaeger.

Erv Goes

Howard F. Peckworth, managing director of the **American Concrete Pipe Association,** Chicago 1, Ill., has made known the appointment of Ray C. Freseman as assistant to the managing director. A civil engineer, he comes to the Association following one year as a design engineer specializing in Foundation design for the Meissner Engineers, Inc. of Chicago.

Ray Freseman

Directors of **Minneapolis-Moline Co.,** Hopkins, Minn. manufacturer of farm, construction and materials handling equipment and electronics products, have elected Edmund F. Buryan of Fort Madison, Ia. as president, chief executive officer and member of the board.

Metcalf & Eddy, 63-year-old architect-engineer firm of Boston, Mass., has designated five staff members as senior associates: Charles G. Hammann, Charles Y. Hitchcock, Jr., Albert B. Rich, Morton Solomon, and Ariel A. Thomas.

Robert A. Olen has been appointed to the position of vice president of **Gar Wood Industries, Inc.,** Wayne, Mich. In announcing the appointment, E. F. Fisher, Gar Wood president, stated that Mr. Olen's more than 35 years of experience in both the manufacture and distribution of truck and heavy construction equipment provides him with an outstanding background in all phases of Gar Wood operations.

Robert Olen

Lewis V. Black, vice president in charge of sales for **Bucyrus-Erie Co.,** was elected president of the Power Crane and Shovel Association, according to an announcement by the South Milwaukee, Wis. manufacturer of heavy construction equipment.

D. L. Nettleton, who assisted in the design of the first RCA computing system, has been named chief engineer, Electronic Data Processing Division, **Radio Corporation of America.**

Laurence G. Mayne has been named manager of the Chemical Specialty Department of the **Ionac Chemical Co.,** Birmingham, N. J., a division of Pfaudler Permutit Inc. Robert Van Iderstine, Ionac general manager views the appointment as a highlight of "Ionac's policy of expanding its extensive experience and unique processing equipment in the ion exchange field to produce and market a number of customized chemical intermediates for the chemical process industries."

Laurence Mayne

Eugene McCoy, programming analyst for **The Cooper-Bessemer Corp.,** Mount Vernon, Ohio, has been appointed assistant manager of gas engine compressor sales, according to D. L. Reed, department manager.

Two new members were elected to the board of directors of **Mueller Co.,** Decatur, Il. are John A. Schluter of New York City and Jackson Kemper of Decatur. Mr. Kemper, executive vice-president of Mueller, was elected to fill the vacancy created by the resignation of W. H. Hipsher.

Alex E. Kessler has joined the **Griffin Pipe Division of Griffin Wheel Company,** Council Bluffs, Ia., as sales representative and has been assigned to the Chicago district office. Before coming to Griffin Pipe, Mr. Kessler was Engineer for the City of Ripon, Wis., and more recently was associated with James B. Clow & Sons.

Alex Kessler

James B. Clow & Sons, Inc., Chicago 80, Ill. manufacturer of cast iron pipe and waterworks supplies, has placed Dale R. Hanson, Indianapolis representative, in charge of its newly opened sales office in Indianapolis, Ind. at 665 East 61 St.

John Ferguson, sales manager, **Athey Products Corp.,** Chicago 38, Ill., has announced the advancement and transfer of Keith V. Gilbert from the firm's advertising department to the sales department where he will act as assistant to the sales manager and be responsible for the development and augmentation of the firm's new sales program.

Word has been received of the death on January 3 of Thomas W. McCreery. Southern sales manager of **United States Pipe and Foundry Company** at the time of his retirement in 1959, Mr. McCreery had been connected with the Birmingham office since 1920 and with U. S. Pipe since 1912.

The Henry Pratt Company of Chicago recently announced the appointment of Fred D. Crowther as president. Mr. Crowther was formerly vice president and general manager of The Chapman Valve Manufacturing Co. The Henry Pratt Company manufactures a complete line of butterfly and ball valves for the water works and power industries.

Fred D. Crowther

Leland M. Wallace has been named manager of street lighting sales at **Revere Electric Mfg. Co.,** Niles, Ill. manufacturer of industrial and commercial outdoor lighting equipment. Mr. Wallace will direct sales of Revere street lighting luminaires, poles and accessories through Revere representatives across the country to utilities, municipalities, and public highway authorities.

Leland Wallace

Thomas G. Lanphier, Jr., 45-year-old industrial executive with extensive experience as an administrator of major research and development projects for both government and business, has been elected president of **Fairbanks, Morse & Co.,** largest manufacturing component of Fairbanks Whitney Corp. and maker of such standard products as pumps and water sys-

(Continued on page 192)

Thomas Lanphier

EXTERIOR of one of the many municipal court buildings in Los Angeles County.

KENNETH HAHN, SUPERVISOR 2nd District, County of Los Angeles.

SEAL OF THE COUNTY OF LOS ANGELES.

A NATIONAL SYSTEM saves taxpayers' money and improves public relations.

"Our *National* System

saves us $70,000 a year...

returns 78% annually on our investment."

—**County of Los Angeles,** *Los Angeles, California*

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"These machines simplify, expedite, and establish better controls over the processing of fees, bails, and fines in our Municipal Courts. Their excellent performance prompted us to install machines in seventeen different courts to date. In all cases, I have received nothing but good reports. They have more than met our expectations for a superior record keeping system. Their mechanical reliability and rugged construction minimize the need for repair and maintenance.

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Massachusetts

About People

(Continued from page 190)

tems, diesel engines and generators, compressors and electronic weighing systems.

Principal officers of Columbia-Southern Chemical Corp., formerly a wholly-owned subsidiary, but now operating under the name of **Pittsburgh Plate Glass Company, Chemical Division,** have been elected as officers of Pittsburgh Plate Glass Company. They are Joseph A. Neubauer, as vice president and general manager, Chemical Division, and Chris F. Bingham, as vice president-chemical sales.

Appointment of Robert E. Scott as International truck fleet sales manager has been announced by Duane F. Kuntz, divisional sales manager of the motor truck division of **International Harvester Co.**

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. So., N. Y. 16, N. Y.

NOTICE TO BIDDERS
MONONA TERRACE CIVIC CENTER AND AUDITORIUM
MADISON, WISCONSIN

Plans for bidding will be available about January 21, 1961.

The Project will include:

a. Parking structure for 930 cars.
b. Exhibition Hall—40,000 sq. ft.
c. Meeting Rooms—17,000 sq. ft.
d. Theatre—2,300 seats
e. Theatre—460 seats
f. Community Center—30,000 sq. ft.
g. Art Gallery—12,000 sq. ft.

Designer, Frank Lloyd Wright.
Architect, William Wesley Peters.

Bids to be opened approximately March 7, 1961.

Bidders' qualifications and proof of responsibility must be filed by February 24, 1961, on forms available from Ray Burt, Building Commissioner, City of Madison, Wisconsin.

Plans will be available for inspection at F. W. Dodge Offices in Madison, Milwaukee, and Chicago.

Copies of contract documents may be obtained from Ray Burt, Building Commissioner, City-County Building, Madison, Wisconsin.

WATER CHEMIST

Fundamental knowledge of the theories involved in bacteriological, chemical, physical and microscopic examinations of water, including the treatment of water supplies. Position is covered by Civil Service. Qualified applicants must have initiative in setting up a qualitative program in a new laboratory, to obtain data to use in design and construction of 30 MGD Filtration Plant and must possess ability to assume administrative duties in the supervision of laboratory technicians and water plant operators. Salary commensurate with experience. Location in northeastern New York State. Write Box 127, The AMERICAN CITY, 470 Park Avenue South, New York, N. Y.

WATER CHEMIST

Concord, California. Salary open. New position, allows individual to obtain necessary lab equipment and establish procedures to personal specifications. Initiative required. Administrative responsibilities available as supervisor of water treatment facilities. Send resume to Contra Costa County Water District, Pittsburg, California.

SENIOR WATER ENGINEER

Concord, California. Salary $800-$972. New position of supervisory, design, and planning nature. California registration required, C. E., M. E., or E. E. or equivalent degree. Send resume to Contra Costa County Water District, Pittsburg, California.

DIRECTOR OF UTILITIES
(BUS LINE MANAGER)

City of Fresno, California seeking qualified applicants for Director of Utilities (Bus Line Manager). Salary $724-$880 per month with additional benefits. Combination training and experience equivalent to graduate from high school and ten years' experience in the Bus Transportation field including at least five years in a responsible administrative capacity. Age limit, 30-50 years, inclusive. Write Personnel Department, Basement, City Hall, Fresno 21, California. Filing deadline, February 24, 1961.

FOR SALE

24 inch sewerage test plug, W2-4 inch taps, brand new.

For information write Azalea Park Utilities, Inc., 5813 Dahlia Drive, Orlando, Florida. Phone CR. 7-1321.

The American City

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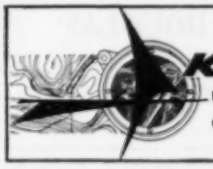

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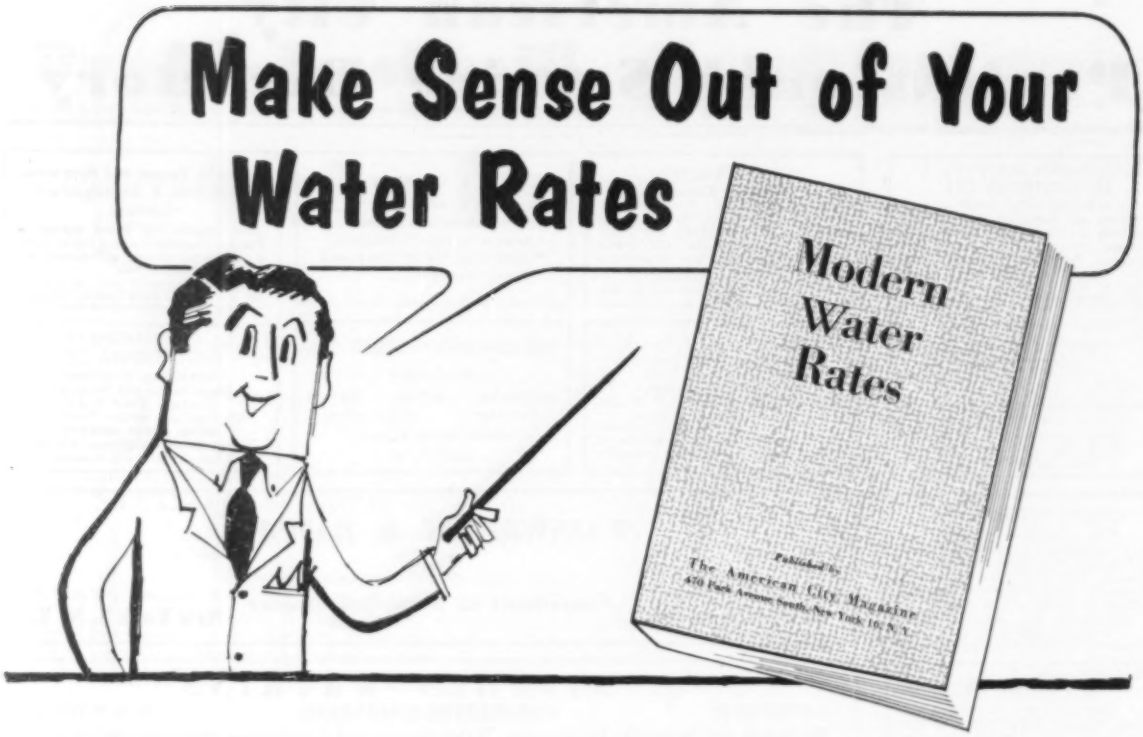

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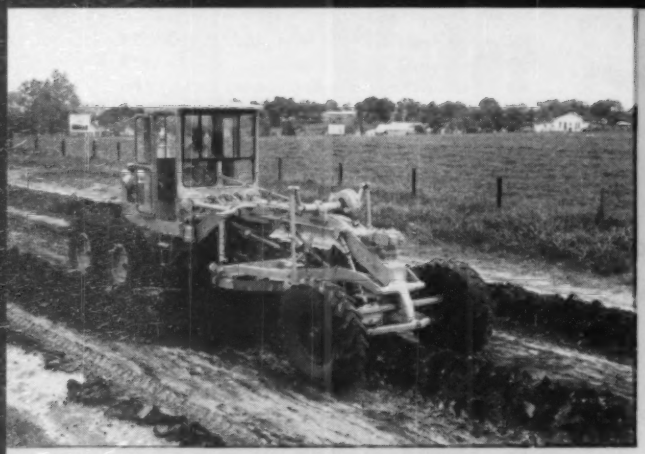

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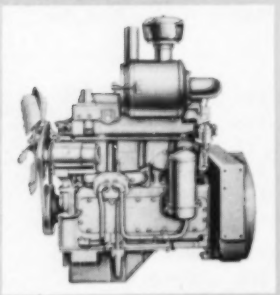

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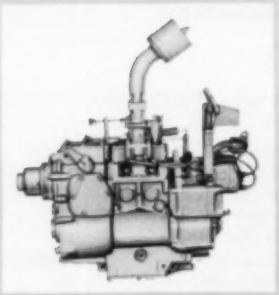

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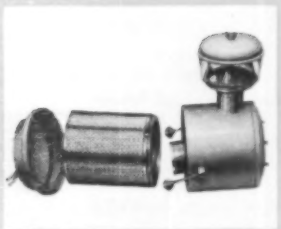

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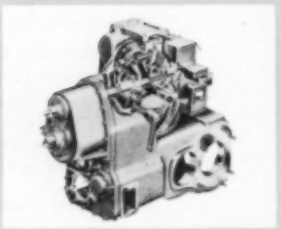

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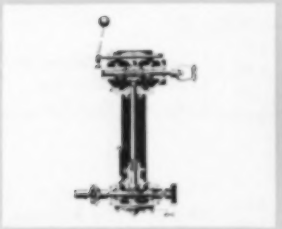

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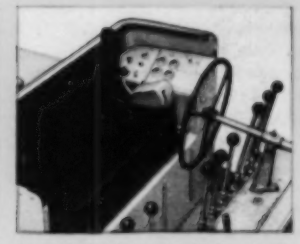

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Yet, this was only the beginning. By the end of the month, *45.1 inches had been measured*. It was the heaviest snow month, *by 10 inches*, in the 65 year records of the U.S. Weather Bureau in South Bend! A terrific workout was given the City's entire equipment fleet.

Work 18 straight 24-hour days

Among this fleet were two veteran four-wheel-drive Model 75A Michigan Tractor Shovels. These units worked continuously, 24 hours a day, for 18 straight days. They helped clear intersections. They plowed snow too deep for graders and truck plows. They loaded windrows in the downtown area. Their speed and versatility helped the City Street Department post an enviable record—despite high winds, subzero temperatures, and the deep drifts, not a missed garbage collection, milk delivery, or stuck emergency vehicle.

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Cost includes wages, maintenance depreciation

Operating costs, overall, have also been exceptionally low. The City of South Bend has had the two Michigans for years—one almost six years; the other, almost four. In 20,000 work hours, total, they have had virtually no downtime. Major repairs, for instance, have cost only $1,500—*$2.88 per machine per week!* Tires on the newer machine are original . . . the City sets aside $5 per machine per week for replacement. Other costs, according to department records, have averaged only $3.55 per hour—*including* wages ($1.85), fuel, oil, maintenance, depreciation ($1.00 per hour), and insurance.

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